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CHEMICALS TESTED FOR PHYTOTOXICITY

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CHEMICALS TESTED FOR PHYTOTOXICITY

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Project Officer

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INTRODUCTION

This publication is a two-volume series. Volume 1 is a catalog of chemicals which have been tested for phytotoxicity for the period 1920-1978. Volume 2 is an index listing the chemicals and plants tested and phytotoxic effects observed. Due to the large number of chemicals which have been tested for phytotoxicity, the decision was made to restrict the coverage to organic chemicals; however, those inorganic chemicals included prior to this decision were retained. Also excluded were toxicity data pertaining to unicellular algae.

Entry Format

Entries in this catalog are arranged alphabetically by chemical name using the ninth edition of *Chemical Abstracts*' preferred name when possible. Associated with the chemical information are the plants tested, the dose and formulation of the chemical, experimental conditions, results of the tests, any appropriate comments, and the reference from which the information was obtained. Because this publication was generated from a computer certain conventions have been established:

1. For a plant's scientific name, QUERCUS ALBA is used for *Quercus alba*.

2. In chemical compounds and elements, SO(2) or possibly SO2 is used for SO_2.

3. For units of measurement such as square feet or square yards, X2 is used for X^2.

4. Chemicals are arranged alphabetically, but those compounds whose names begin with numbers are listed separately because of the way they are read by the computer.

Indexes

The following indexes are provided: (1) chemical name, (2) chemical common name, (3) plant common name, (4) plant scientific name, (5) reference, (6) chemical hierarchical, (7) plant hierarchical, and (8) effect hierarchical. Each hierarchical index contains information on the chemical and plant tested as well as the effect that was observed; the difference is that one is keyed to the chemical, another to the plant, and the other to the effect.

The following are the effect terms used in the hierarchical indexes to categorize the reported phytotoxic effects: effective weed control/severe crop damage; chlorosis; foliar damage; growth reduction/retardation; flowering inhibition/flower injury; vigor reduction; no injury; cellular

effects; bioaccumulation; yield reduction; noneffective weed control/minor crop damage; moderately effective weed control/moderate crop damage; photosynthetic inhibition; biochemical alteration; undefined phytotoxic effects; growth malformation; minor growth reduction; germination inhibition; no significant germination reduction; no significant yield reduction; pollen viability reduced/pollen sterility; fruit injury; growth stimulation; sterility/reduced seed-set; chromosome aberrations; mitotic abnormalities; photoreaction changes; oxidative phosphorylation inhibition; protein synthesis inhibition; membrane permeability changes; pigment synthesis inhibition; and mutations. The effect terms effective weed control/severe crop damage, moderately effective weed control/moderate crop damage, and noneffective weed control/minor crop damage contain descriptors of both weed and crop injuries; however, only one of the descriptors applies in each instance depending on whether the plant is considered a weed or a crop in a particular reference.

LIST OF ABBREVIATIONS

g/cm^2	—	grams per square centimeter
gpa	—	gallons per acre
pphm	—	parts per hundred million
w/v	—	weight/volume
pts	—	pints
Bu/A	—	bushels per acre
ae	—	acid equivalent
LC	—	liquid concentrate
WD	—	water dispersible powder
WS	—	water soluble liquid
cwt	—	hundred weight
N	—	normal
M	—	molar
SP	—	soluble powder
aihg	—	active ingredient per 100 gallons
mM	—	millimeters
cc	—	cubic centimeter or centimeters
ppth	—	parts per thousand
DO	—	dissolved oxygen
WP	—	wettable powder
A	—	acre or acres
EC	—	emulsifiable concentrate
ha	—	hectare or hectares
psi	—	pounds per square inch

<1>
CHEMICAL NAME: [1,1-Biphenyl]-4-acetic acid, 2-fluoroethyl ester
CHEMICAL COMMON NAME: TH-367-1
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Moderate leaf damage and considerable stand reduction
COMMENTS: 9 of 15 carbamates, 8 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<2>
CHEMICAL NAME: [1,1'-Biphenyl]-2-amine
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse phytotoxic effect
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<3>
CHEMICAL NAME: [1,1'-Biphenyl]amine, 2,4,4-trifluoro-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Severe damage to peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<4>
CHEMICAL NAME: [1] Benzopyrano [3,4,-6] Furo [2,3-h] [1] benzopyran-6 (6aH)-one,1,2,12,12a-tetrahydro-8,9-dimethoxy-2-(1-methyethenyl)-, [2R-(2 alpha, 6a alpha, 12a alpha)]-
CHEMICAL COMMON NAME: Derris
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2 lb/40 gal water; 4 oz Areskap spreader
APPLICATION METHODS: Foliar spray; 80 psi; two or five applications
EXPERIMENTAL CONDITIONS: Field study; powdered derris root contained 4% rotenone
EFFECTS: No adverse effect on corn
COMMENTS: All spray applications gave an increase in borer-free ears; sprays also gave reductions in borer populations; all sprays used with exception of two applications of cryolite showed profits; five applications of derris spray most profitable
REFERENCE: Stirrett, G.M. and R.W. Thompson, "Spraying for the Control of the European Corn Borer in Sweet Corn," Ann. Rept. Ent. Soc. Ontario 71:9-15 (1940).

<5>
CHEMICAL NAME: [1]Benzopyrano[3,4-beta]furo[2,3-h][1]benzopyran-6(6aH)-one, 1, 2, 12, 12a-tetrahydro-8,9-dimethoxy-2-(1-methylethenyl-, [2R-(2 alpha, 6a alpha, 12a alpha)]-
CHEMICAL COMMON NAME: Rotenone
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Dust; 30 lb/A
EXPERIMENTAL CONDITIONS: Field study; 4 or 8 applications beginning with plant emergence
EFFECTS: No adverse effect
COMMENTS: Four applications of dusts of lindane, rotenone, methoxychlor, nicotine, calcium arsenate-tale, calcium arsenate-COCS, or COCS-talc neutral in effect on cucumber; four applications of dusts of DDT caused severe stunting of vines and markedly reduced yields
REFERENCE: Harcourt, D.G. and L.M. Cass, "Toxicities of Various Insecticides to Cucumber," Cand. J. Agr. Sci. 35:19-26 (1955).

<6>
<6>
CHEMICAL NAME: Acetamide
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10 and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--wheat and cabbage grew normally, ryegrass slightly abnormally; pot test--normal wheat and cabbage growth; Petri dish test--normal wheat root growth (100%) at all concentrations
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<7>
CHEMICAL NAME: Acetamide, alpha-chloro-trichlorophenyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: Effective control for 3 crops at 20.0 lb rate
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<8>
CHEMICAL NAME: Acetamide, beta-naphthoxy-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity approximately equal to alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<9>
CHEMICAL NAME: Acetamide, chlorodiallyl-
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 3 and 4 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 4 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<10>
CHEMICAL NAME: Acetamide, N-(butoxymethyl)-2-chloro-N-(2,6-diethylphenyl)-
CHEMICAL COMMON NAME: Butachlor
PLANT: Rice (LEERSIA ORYZOIDES); Feather grass (LEPTOCHLOA CHINENSIS); (ROTTBOELLIA EXALTATA); Nutsedge, purple (CYPERUS ROTUNDUS); Junglerice (ECHINOCHLOA COLONUM); (PHYLLANTHUS sp.); Spurge, painted-leaf (EUPHORBIA HETEROPHYLLA)
EXPERIMENTAL DOSE: 2 and 3 kg/ha
APPLICATION METHODS: Application by knapsack sprayer at 670 dm(3)/ha volume; also applied as granules
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; 3 x 5 m plots; visual toxicity and weed control ratings
EFFECTS: 3 kg/ha postemergence applied 7 days after rice emergence acceptable for E. COLONUM but not C. ROTUNDUS; 2 kg/ha granular application at 7 days after seeding showed similar results; 3 kg/ha applied 8 days after seeding--very minor rice toxicity, no effect on C. ROTUNDUS and R. EXALTATA, acceptable control of L. CHINENIS and E. COLONUM
COMMENTS: Effects on all weeds not specifically reported; promising herbicide for rice weed control; most promising treatment--propanil/butachlor mixture at 3 and 2 kg/ha respectively
REFERENCE: Aryeetey, A.N., "Chemical Weed Control in Rice in Ghana," Ghana J. Agric. Sci. 6:199-204 (1973).

<11>
CHEMICAL NAME: Acetamide, N-(butoxymethyl)-2-chloro-N-(2,6-diethylphenyl)-
CHEMICAL COMMON NAME: Butachlor
PLANT: Plants; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 1.0 and 2.0 kg/ha; G and sprayable liquids
APPLICATION METHODS: Broadcast (G) and spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control and increased rice yield
COMMENTS: 2,4-D and MCPA equally effective in controlling barnyard grass and other annual weeds in transplanted rice; yields significantly increased in nearly all applications; for direct-seeded flooded rice, granular formulations of several new herbicides, such as butachlor, benthiocarb and C-288 highly selective in controlling barnyardgrass and other annual weeds under tropical conditions
REFERENCE: De Datta, S.K., "Chemical Weed Control in Tropical Rice in Asia," PANS 28(4):433-440 (1972).

<12>
CHEMICAL NAME: Acetamide, N-(butoxymethyl)-2-chloro-N-(2,6-diethylphenyl)-
CHEMICAL COMMON NAME: CP-53619
PLANT: Millet, Japanese (ECHINOCHLOA CRUSGALLI); Sorghum, grain (SORGHUM BICOLOR); Nutsedge, yellow (CYPERUS ESCULENTUS); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 2.24 and 4.48 kg/ha
APPLICATION METHODS: Preplant spray; 37 dkl./ha; soil incorporated (10 cm depth)
EXPERIMENTAL CONDITIONS: Field study; soil--Hespera sandy loam and Hespera loamy sand; evaluation time--2 and 5 wk and harvest; sorghum and millet used as bioassay plants in persistence evaluation
EFFECTS: Moderate damage to all plants except seed cotton for which there was no yield reduction
COMMENTS: All herbicides controlled nutsedge for at least 1 month in two or more experiments; cotton most tolerant to applications of CP-53619, of prometryne, of San-6706, and of methazole; higher rates of San-6706, and methazole and all rates of alachlor, R-7465, and R-12001 reduced yield of cotton in one or more experiments
REFERENCE: Keeley, P.E., J.H. Miller, and C.H. Carter, "Weed and Cotton Response to Several Herbicides," Weed Sci. 21(4):327-329 (1973).

<13>
CHEMICAL NAME: Acetamide, N-(butoxymethyl)-2-chloro-N-(2,6-diethylphenyl)-
CHEMICAL COMMON NAME: Butachlor
PLANT: Pea, sweet (PISUM SATIVUM); Amaranth (AMARANTHUS VIRIDIS); (DIGERA ARVENSIS); (BOERHAAVIA DIFFUSA); (BOERHAAVIA REPANDA); Dayflower (COMMELINA BENGHALENSIS); (PENNISETUM TYPHOIDES); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0, 10.0, and 100 ppm
APPLICATION METHODS: Postemergence spray to runoff
EXPERIMENTAL CONDITIONS: greenhouse study (presumed); pot culture
EFFECTS: Slight to moderate damage to all plants except P. SATIVUM and C. ROTUNDUS (slight damage)
COMMENTS: Triazine and urea herbicides caused appreciable stimulation of stomatal opening within two hours; amides caused rapid closure of open stomata; thiocarbamates caused differential response
REFERENCE: Rama Das, V.S. and M. Santakumari, "Stomatal Behaviour Towards Four Classes of Herbicides as a Basis of Selectivity to Certain Weeds and Crop Plants," Proc. Indian Acad. Sci. B2B(3):108-116 (1975).

<14>
CHEMICAL NAME: Acetamide, N-(butoxymethyl)-2-chloro-N-(2,6-diethylphenyl)-
CHEMICAL COMMON NAME: CP-53619
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Cotton (GOSSYPIUM HIRSUTUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.12, 2.24, and 4.48 kg/ha
APPLICATION METHODS: Soil surface spray (preplant) with incorporation; 56 dkl/ha; depth--6.35 cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Hesperia fine sandy loam; temperature--27 to 31 C; nutsedge tubers and cotton seed planted; plastic container culture; evaluation time--up to 8 wk
EFFECTS: Effective control of yellow nutsedge; slightly less effective against purple nutsedge; cotton fairly tolerant to CP-53619
COMMENTS: All treatments except lowest rate of alachlor and VCS-438 controlled yellow nutsedge for 8 weeks; these and other compounds less effective against purple nutsedge; all herbicides moderately to severely damaged cotton except CP-53619 and R-7465
REFERENCE: Keeley, P.E., C.H. Carter, and J.H. Miller, "Evaluation of the Relative Toxicity of Herbicides to Cotton and Nutsedge," Weed Sci. 20(1):71-74 (1972).

<15>
CHEMICAL NAME: Acetamide, N-(butoxymethyl)-2-chloro-N-(2,6-diethylphenyl)-
CHEMICAL COMMON NAME: Butachlor
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Fair sesame tolerance and poor barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<16>
<16>
CHEMICAL NAME: Acetamide, N-(butoxymethyl)-2-chloro-N-(2,6-diethylphenyl)-
CHEMICAL COMMON NAME: Butachlor
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Hyacinth, water (MONOCHORIA VAGINALIS); Umbrellaplant (CYPERUS DIFFORMIS)
EXPERIMENTAL DOSE: 1.5 kg/ha
APPLICATION METHODS: Preemergence and pre-plant incorporated; types of applications not specifically stated for varied studies
EXPERIMENTAL CONDITIONS: Field studies
EFFECTS: Effective weed control except for water hyacinth (moderate control) with no adverse effect on rice
COMMENTS: As preplant incorporated application, excellent weed control obtained in cotton, soybeans, peanuts and other crops; AC-92,553 also applied pre-emergence; with this method, controlled most grasses and certain broadleaved weeds in maize, wheat, and rice
REFERENCE: Sprankle, P.L., "AC-92,553, Selective Herbicide for Weed Control in Cereals and Other Crops," Proc. 12th British Weed Cont. Conf. 2:825-830 (1974).

<17>
CHEMICAL NAME: Acetamide, N-(butoxymethyl)-2-chloro-N-(2,6-diethylphenyl)-
CHEMICAL COMMON NAME: Butachlor
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Moderate control of weeds and no adverse effect on peanut vigor
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit futher testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<18>
CHEMICAL NAME: Acetamide, N-(dimethylaminomethyl)-2,4-dichlorophenoxy-
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 1.0, 2.5, and 5.0X10(-3)M (3 ml/plant)
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Death of all root sections at 5.0 X 10(-3)M and death of proximal root sections at all application rates
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

<19>
CHEMICAL NAME: Acetamide, N-(dimethylphenyl)-2-chloro-N-1-(methylethoxymethyl)-
CHEMICAL COMMON NAME: CP-52

<20>
CHEMICAL NAME: Acetamide, N-(dimethylphenyl)-2-chloro-N-1-(methylethoxymethyl)-
CHEMICAL COMMON NAME: CP-52265
PLANT: Cauliflower (BRASSICA OLERACEA); Broccoli (BRASSICA OLERACEA); Speedwell (VERONICA sp.); Chickweed, common (STELLARIA MEDIA); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Preemergence spray at a volume of 40 gpa
EXPERIMENTAL CONDITIONS: Medium loam soil; split plot design with 3 replications; 10 X 2 yd plot size; atleast 2 visual assessments of treatment effect
EFFECTS: Minor crop injury, cabbage injured the least followed by broccoli; excellent VERONICA sp. control and good S. MEDIA control
REFERENCE: Cassidy, J.C., "Herbicide Evaluation in Brassica Crops - 1968-72," Proc. Brit. Weed Control Conf. 11:958-964 (1972).

<21>
CHEMICAL NAME: Acetamide, N-(3,4-dichlorophenyl)-3-(2'-methylphenoxy)-
PLANT: Mustard, white (SINAPIS ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 4.0 kg/ha; WP; 25% active compound; 5% lye, 5% Emmulat P-141, and 65% kaolin
APPLICATION METHODS: Pre- and postemergence applications; method not specified
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Slight (5%) kill of mustard in preemergence application but no further damage noted
COMMENTS: Synthesized 3,4-dichloroanilides had no or little herbicidal activity, as compared with high activity of known herbicides, 3,4-dichloropropionanilide and 2,4-dichlorophenoxyacetic acid; introduction of phenoxy groupings into acid moiety of active fatty acid-3,4-dichloroanilides as well as introduction of 3,4-dichloroaniline group into carboxylic group of active phenoxyacetic acids decreased herbicidal activity
REFERENCE: Matolcsy, G. and M. Hamran, "The Herbicidal Effect on Some Substituted Anilides," Weed Res. 4(2):118-122 (1963).

<22>
CHEMICAL NAME: Acetamide, N-(3,4-dichlorophenyl)-3-phenoxy-
PLANT: Mustard, white (SINAPIS ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 4.0 kg/ha; WP; 25% active compound; 5% lye, 5% Emmulat P-141, and 65% kaolin
APPLICATION METHODS: Pre- and postemergence applications; method not specified
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: No adverse effects
COMMENTS: Synthesized 3,4-dichloroanilides had no or little herbicidal activity, as compared with high activity of known herbicides, 3,4-dichloropropionanilide and 2,4-dichlorophenoxyacetic acid; introduction of phenoxy groupings into acid moiety of active fatty acid-3,4-dichloroanilides as well as introduction of 3,4-dichloroaniline group into carboxylic group of active phenoxyacetic acids decreased herbicidal activity
REFERENCE: Matolcsy, G. and M. Hamran, "The Herbicidal Effect on Some Substituted Anilides," Weed Res. 4(2):118-122 (1963).

<23>
CHEMICAL NAME: Acetamide, N-(3',4'-dichlorophenyl)-3-(2,4,5-trichlorophenoxy)-
PLANT: Mustard, white (SINAPIS ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 4.0 kg/ha; WP; 25% active compound; 5% lye, 5% Emmulat P-141, and 65% kaolin
APPLICATION METHODS: Pre- and postemergence applications; method not specified
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Growth abnormality in postemergence application to mustard but no further adverse effects
COMMENTS: Synthesized 3,4-dichloroanilides had no or little herbicidal activity, as compared with high activity of known herbicides, 3,4-dichloropropionanilide and 2,4-dichlorophenoxyacetic acid; introduction of phenoxy groupings into acid moiety of active fatty acid-3,4-dichloroanilides as well as introduction of 3,4-dichloroaniline group into carboxylic group of active phenoxyacetic acids decreased herbicidal activity
REFERENCE: Matolcsy, G. and M. Hamran, "The Herbicidal Effect on Some Substituted Anilides," Weed Res. 4(2):118-122 (1963).

<24>
CHEMICAL NAME: Acetamide, N-(3',4'-dichlorophenyl)-3-(2,4,6-trichlorophenoxy)-
PLANT: Mustard, white (SINAPIS ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 4.0 kg/ha; WP; 25% active compound; 5% lye, 5% Emmulat P-141, and 65% kaolin
APPLICATION METHODS: Pre- and postemergence applications; method not specified
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: No adverse effects
COMMENTS: Synthesized 3,4-dichloroanilides had no or little herbicidal activity, as compared with high activity of known herbicides, 3,4-dichloropropionanilide and 2,4-dichlorophenoxyacetic acid; introduction of phenoxy groupings into acid moiety of active fatty acid-3,4-dichloroanilides as well as introduction of 3,4-dichloroaniline group into carboxylic group of active phenoxyacetic acids decreased herbicidal activity
REFERENCE: Matolcsy, G. and M. Hamran, "The Herbicidal Effect on Some Substituted Anilides," Weed Res. 4(2):118-122 (1963).

<25>
CHEMICAL NAME: Acetamide, N-(3',4'-dichlorophenyl)-3-methyl-3-(2,4,5-trichlorophenoxy)-
PLANT: Mustard, white (SINAPIS ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 4.0 kg/ha; WP; 25% active compound; 5% lye, 5% Emmulat P-141, and 65% kaolin
APPLICATION METHODS: Pre- and postemergence applications; method not specified
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Growth abnormality in postemergence application to mustard but no further adverse effects
COMMENTS: Synthesized 3,4-dichloroanilides had no or little herbicidal activity, as compared with high activity of known herbicides, 3,4-dichloropropionanilide and 2,4-dichlorophenoxyacetic acid; introduction of phenoxy groupings into acid moiety of active fatty acid-3,4-dichloroanilides as well as introduction of 3,4-dichloroaniline group into carboxylic group of active phenoxyacetic acids decreased herbicidal activity
REFERENCE: Matolcsy, G. and M. Hamran, "The Herbicidal Effect on Some Substituted Anilides," Weed Res. 4(2):118-122 (1963).

<26>
CHEMICAL NAME: Acetamide, N-(4-chlorophenyl)-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--wheat growth normal, cabbage growth slightly abnormal; Petri dish test--94, 79, and 45% wheat growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<27>
<27>
CHEMICAL NAME: Acetamide, N-(4-chlorophenyl)-N-methyl
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--abnormal cabbage growth, slightly abnormal wheat growth; Petri dish test--no data
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<28>
CHEMICAL NAME: Acetamide, N-(4-chlorophenyl)-2-hydroxyimino-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse phytotoxic effect
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<29>
CHEMICAL NAME: Acetamide, N-[4-methyl-3-[[(trifluoromethyl)sulfonyl]amino]phenyl]-
CHEMICAL COMMON NAME: Sustar
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.12, 1.68, and 2.24 kg/ha
APPLICATION METHODS: Postemergence spray (liquids) and drop-spreader granular formed; second application made if deemed necessary; 2% WS formulation
EXPERIMENTAL CONDITIONS: Field study; evaluation time--4 mo with mowing at 5 to 8 day intervals
EFFECTS: Growth reduction with discoloration for 2 to 3 weeks, both temporary and resulting from a single application
COMMENTS: Proxazolon and MBR-12325 retarded growth more than the other materials; proxazolon slower acting than MBR-12325; EL-509 only material that did not significantly retard growth; 4 weeks after initial application, turf that had been significantly reduced in growth, grew faster than untreated; all materials caused an unacceptable discoloration lasting for 2 to 3 weeks; lower rates tended to cause less discoloration, but growth suppression did not last as long as higher rates
REFERENCE: Watschke, T.L., "Growth Regulation of Kentucky Bluegrass With Several Growth Retardants," Agron. J. 68(1):787-791 (1976).

<30>
CHEMICAL NAME: Acetamide, N-[4-methyl-3-[[(trifluoromethyl)sulfonyl]amino]phenyl]-, compd. with 2,2'-iminobis[ethanol](1:1)
CHEMICAL COMMON NAME: MBR-6033
PLANT: Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 1.12, 2.24, 4.5 and 6.7 kg/ha
APPLICATION METHODS: Application on established sod with a CO(2) sprayer in 336 l./ha water with 0.7% Aerosol OT surfactant (sulfosuccinic acid)
EXPERIMENTAL CONDITIONS: Two spring field experiments; 15 year old sod fertilized before treatment; 1.5 X 9.1 m plots in randomized complete block design with 4 replications
EFFECTS: Experiment 1--4.5 kg/ha (only treatment) gave signifcant reduction in height and dry matter yield after 37 and 62 days respectively, no significant color change after 58 days; experiment 2--significant reduction in height and dry matter yield after 37 and 61 days respectively, grass color enhanced at all rates
COMMENTS: Possible use in intensively managed turfgrass situations; greenhouse studies determined chemicals for field tests
REFERENCE: Elkins, D.M. and D.L. Suttner, "Chemical Regulation of Grass Growth. I. Field and Greenhouse Studies with Tall Fescue," Agron. J. 66:487-491 (1974).

<31>
CHEMICAL NAME: Acetamide, N-[4-methyl-3-[[(trifluoromethyl)sulfonyl]amino]phenyl]-, compd. with 2,2'-iminobis[ethanol](1:1)
CHEMICAL COMMON NAME: MBR-6033
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.12, 2.24, 4.5 and 6.7 kg/ha (spring only)
APPLICATION METHODS: Postemergence sprays applied with CO(2) sprayer in 356 l./ha water containing 0.7% Aerosol OT surfactant
EXPERIMENTAL CONDITIONS: Field experiments; fall and spring treatments; randomized complete block design with 4 replications; height measurements and color changes observed in spring trial, dry matter yield also recorded in fall trial
EFFECTS: Fall treatment--significant height reduction at all rates after 36 days, significant color change at

<31> CONT.
2.24 and 4.5 kg/ha after 22 days; spring treatment--significant reduction in height after 35 days and in dry matter yield after 49 days at all rates, significant color change at all rates after 24 days
COMMENTS: Greenhouse experiments determined chemicals used in field tests; not recommended for lawn use
REFERENCE: Elkins, D.M., J.A. Tweedy, and D.L. Suttner, "Chemical Regulation of Grass Growth. II. Greenhouse and Field Studies with Intensively Managed Turfgrasses," Agron. J. 66:492-497 (1974).

<32>
CHEMICAL NAME: Acetamide, N-[4-methyl-3-[[trifluoromethyl)sulfonyl]amino]phenyl]-, compd. with 2,2'-iminobis[ethanol] (1:1)
CHEMICAL COMMON NAME: MBR-6033
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 100 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Promoted tuber sprouting
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<33>
CHEMICAL NAME: Acetamide, N-[4-methyl-3[[(trifluoromethyl)sulfonyl]amino]phenyl]-
CHEMICAL COMMON NAME: Fluoridamid
PLANT: Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Postemergence spray in 50 gpa water including wetting agent; 2 lb/gal formulation
EXPERIMENTAL CONDITIONS: 4 fall treatments, 6 spring treatments; experimental sites located on highway rights-of-way; 200 sq ft treatment sites with 1 sq ft subsample areas; 2 replicates of fall treatments and 3 of spring treatments; number of seedheads counted, height of 3 representative plants measured, and visual damage estimates made
EFFECTS: Seedhead and plant height reduction, more pronounced from fall treatments; minor foliage injury; 99.6 and 97.6% live foliage in fall and spring, respectively, compared to untreated control
REFERENCE: Chappell, W.E., J.S. Coartney, and M.L. Link, "Plant Growth Regulators for Highway Maintenance," Proc. South. Weed Sci. Soc. 30:300-305 (1977).

<34>
CHEMICAL NAME: Acetamide, N-cyclohexyl-2,4-dichlorophenyl-
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 1.0, 2.5, and 5.0X10(-3)M (3 ml/plant)
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Very slight effects at any application rate or for any root section location
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

<35>
CHEMICAL NAME: Acetamide, N-methyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal wheat, cabbage, and ryegrass growth; pot test--no data; Petri dish test--100% root growth at 1 ppm, 93% at 10 ppm, and 108% at 100 ppm
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<36>
CHEMICAL NAME: Acetamide, N-methyl-N-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days

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<36> CONT.
after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--ryegrass growth slightly abnormal, cabbage and wheat growth normal; pot test--no data; Petri dish test--100, 104, and 89% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<37>
CHEMICAL NAME: Acetamide, N-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--cabbage growth slightly abnormal, wheat and ryegrass normal; pot test--no data; Petri dish test--98% wheat root growth at 1 ppm, 96% at 10 ppm, and 70% at 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<38>
CHEMICAL NAME: Acetamide, N,N-diallylchloro-
CHEMICAL COMMON NAME: Allidochlor
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3) and 10(-4)M; moderate control at 10(-5)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<39>
CHEMICAL NAME: Acetamide, N,N-dimethyl-
CHEMICAL COMMON NAME: DMA
PLANT: Nutsedge (CYPERUS sp.)
EXPERIMENTAL DOSE: 3.8 and 5.0 oz/1000 sq ft
APPLICATION METHODS: Postemergence spray; 4 gal water/30 psi; repeated applications (up to 4) at monthly intervals
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Reduced numbers of shoots and tubers at both rates but repeat applications required for effective control
COMMENTS: Repeat applications of amine methylarsonate over year period resulted in significant reductions in nutsedge tubers; singly annual applications of amine methylarsonate at same rates ineffective; amine methylarsonate and disodium monomethylarsonate treatments gave moderate reductions in nutsedge tuber numbers in Bermudagrass turf one season
REFERENCE: Long, J.A., W.W. Allen, and E.C. Holt, "Control of Nutsedge in Bermudagrass Turf," Weeds 10(4):285-287 (1962).

<40>
CHEMICAL NAME: Acetamide, N,N-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal growth; pot test--no data; Petri dish test--no data
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<41>
CHEMICAL NAME: Acetamide, trichloro-N-(3-chlorophenyl)-
CHEMICAL COMMON NAME: 3-CTCAA
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6)M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da

<41> CONT.
EFFECTS: Minimum lethal concentration 4.28 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<42>
CHEMICAL NAME: Acetamide, trichloro-N-(3-methylphenyl)-
CHEMICAL COMMON NAME: 3-MTCAA
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6)M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 4.28 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<43>
CHEMICAL NAME: Acetamide, trichloro-N-(4-chlorophenyl)-
CHEMICAL COMMON NAME: 4-CTCAA
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6)M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 4.28 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<44>
CHEMICAL NAME: Acetamide, trichloro-N-(4-methylphenyl)-
CHEMICAL COMMON NAME: 4-MTCAA
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6)M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 4.28 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<45>
CHEMICAL NAME: Acetamide, 2-(2-fluorophenoxy)-N-(phenylmethyl)-
PLANT: (PHASEOLUS RADIATIS)
EXPERIMENTAL DOSE: 5, 10, 25, and 50 ppm
APPLICATION METHODS: Seeds soaked for 6 hr
EXPERIMENTAL CONDITIONS: Control seeds soaked in 1.0 % ethanol; after soaking, seeds washed with distilled water and germinated in an incubator at 30 C; radicle and hypocotyl length of 30 seeds recorded
EFFECTS: 5 ppm--43% growth inhibition after 12 hr germination; 10 ppm--55% growth inhibition, radicle growth inhibited more than hypocotyl; radicle killed at concentrations of 10 ppm and above; at 5 ppm after 60 hr, radicle growth 4 times less than in control; hypocotyl growth in control, 5 times greater than 10 ppm treated seedlings; no hypocotyl growth at 25 and 50 ppm after 24 hr
COMMENTS: Inhibition due to antiauxin effects
REFERENCE: Tewari, M.N., "Inhibition of Growth of the Seedlings of PHASEOLUS RADIATUS Linn. by N-Benzyl Orthofluorophenoxy Acetamide - A New Growth Retardant," Experientia 25:433-434 (1969).

<46>
<46>
CHEMICAL NAME: Acetamide, 2-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D acetamide
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preplant non-incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: Effective weed control with no adverse effect on cotton and soybean and moderate damage of corn
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but fairly safe on corn; MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(isopropylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<47>
CHEMICAL NAME: Acetamide, 2-(2,4-dichlorophenoxy)-
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4 and 8 lb/A
APPLICATION METHODS: Preplanting incorporated treatments
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications; corn planted 5, 10, and 20 days after treatment; soil--Lakeland sand
EFFECTS: 4 lb/A caused a 10% reduction in corn stand, 8 lb/A a 60% reduction
REFERENCE: Robinson, E.L., Soil-incorporated Pre-planting Herbicides for Witchweed Control," Weeds 9(3):411-415 (1961).

<48>
CHEMICAL NAME: Acetamide, 2-(4-chloro-2-methylphenoxy)-N-methoxy-
CHEMICAL COMMON NAME: OCS-21799
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 1.1 and 2.2 kg/ha
APPLICATION METHODS: Preemergence treatments; September applications
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Severe injury to all plants
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<49>
CHEMICAL NAME: Acetamide, 2-bromo-N-[2-(1,1-dimethylethyl)-6-methylphenyl]-N-(methoxymethyl)-
CHEMICAL COMMON NAME: CD-45,592
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-3), 10(-4), and 10(-5)M; moderate control at 10(-6)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.P. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<50>
CHEMICAL NAME: Acetamide, 2-bromo-N-[2-(1,1-dimethylethyl)-6-methylphenyl]-N-(methoxymethyl)-
PLANT: Weeds; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 1 and 3 lb/A
APPLICATION METHODS: EC Formulation; preemergence spray at 50 gpa volume
EXPERIMENTAL CONDITIONS: Four rows per plot, plot length of 12 to 24 yd; 3 test sites; randomized blocks or factorial designs with 3 or 4 replicates
EFFECTS: Weed control significantly better than unsprayed control; beet yield reduced at 3 lg/A
REFERENCE: Allott, D.J., "Sugar Beet Herbicide Trials in Northern Ireland 1964/66," North. Irel. Minist. Agric. Rec. Agric. Res. 16(2):103-107 (1968).

<51>
CHEMICAL NAME: Acetamide, 2-bromo-N[2-(1,1-dimethylethyl)-6-methylphenyl]-
CHEMICAL COMMON NAME: CP-32179
PLANT: Beet (BETA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Kochia (KOCHIA SCOPARIA); Broadleaf weeds; Foxtail (SETARIA sp.)
EXPERIMENTAL DOSE: 4 to 16 lb/A
APPLICATION METHODS: Preplanting incorporated spray at 40 psi and 14.3 gpa
EXPERIMENTAL CONDITIONS: Spring and summer tests; sandy and clay loam soils; some weed seedlings made; irrigation when necessary; broadleaf weeds dominant over grass weeds
EFFECTS: Spring--11% beet stunting and 101% beet stand, 85, 40, 51, and 86% control of pigweed, kochia, broadleaves, and foxtail, respectively; summer--10% beet stunting and 151% beet stand, 91 and 92% pigweed

<51> CONT.
and foxtail control, respectively
COMMENTS: Comparisons with control; broadleaves refers to broadleaves other than pigweed and kochia; summer treatments more effective
REFERENCE: Sullivan, E.F., P.R. Wood, R.L. Abrams, and S.G. Walter, "Preplant Weed Control on Sugar Beets," Am. Soc. Sugar Beet Technol. 13(5):389-396 (1965).

<52>
CHEMICAL NAME: Acetamide, 2-chloro-
CHEMICAL COMMON NAME: Chloroacetamide
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<53>
CHEMICAL NAME: Acetamide, 2-chloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--abnormal cabbage growth, slightly abnormal wheat growth; Petri dish test--92, 87, and 71% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<54>
CHEMICAL NAME: Acetamide, 2-chloro-N

<55>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-N-phenyl-
CHEMICAL COMMON NAME: Ramrod
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.36, 6.72, and 13.44 kg/ha, 65% WP
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; application one day after sowing; time period -- 1969 to 1971
EFFECTS: At highest rates, moderate control of grass weeds and slight to moderate control of broadleafs with no adverse effect on corn
COMMENTS: Atrazine, and lasso found on par with hand weeding as far as grain yields concerned; atrazine found to control broad spectrum of weeds compared to other herbicides; tafazine 50W effective in controlling weeds but grain yields depressed
REFERENCE: Singh, D.J.C., V.L. Hall, and K.N. Rao, "Weed Control in Maize by Herbicides," The Andhra Agric. J. 18(3):91-94 (1971).

<56>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-N-phenyl-
CHEMICAL COMMON NAME: DDT
PLANT: Petunia (PETUNIA sp.)
EXPERIMENTAL DOSE: 1000 ppm; WP
APPLICATION METHODS: Added (spray) to agar medium disk to run-off
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--15 hr; pollen germinated and length of germination tube measured
EFFECTS: Reduced germination and pollen tube growth
COMMENTS: Germination of petunia and tomato pollen completely inhibited by topical applications of naled; reduction in germination and tube elongation of pollen caused by parathion, azinphosmethyl, difocol, endosulfan, dichlorvos, DDT, and gardona
REFERENCE: Gentile, A.G., K.J. Gallagher, and Z. Santner, "Effect of Some Formulated Insecticides on Pollen Germination in Tomato and Petunia," J. Econ. Ent. 64(4):916-919 (1971).

<57>
<57>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-2-propynl)-N-phenyl-
CHEMICAL COMMON NAME: Prynachlor
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 3 and 4 lb/A
APPLICATION METHODS: EC formulation; spray applied in 40 gpa volume
EXPERIMENTAL CONDITIONS: Sassafras loam soil; plots--4 rows or 14 ft x 20 ft; randomized block design with 3 replications; May 24 planting and August 8 ratings and harvest; center 2 rows of each plot used for yield determination
EFFECTS: 86% broadleaf and 83% grass control at 3 lb/A; 84% broadleaf and 88% grass control at 4 lb/A; no significant effect on corn
COMMENTS: Prynachlor plus atrazine gave better weed control than prynachlor alone
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-2-propynl)-N-phenyl-
CHEMICAL COMMON NAME: Prynachlor
PLANT: Potato (SOLANUM TUBEROSUM); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: EC formulation applied as spray at 30 psi and 40 gpa volume
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications for each experiment; plot size--4 rows or 12 ft x 20 ft; Sassafras loam soil; center 2 rows harvested for yield determination
EFFECTS: 67% broadleaf and 81% grass control; no significant effect on potato yield when compared with cultivated control
COMMENTS: Combination with other herbicides increased weed control
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-2-propynl)-N-phenyl-
CHEMICAL COMMON NAME: Prynachlor
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLOPUM); Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 4.0 and 6.0 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays; 60 gal/A; applied singly and in combination in some instances
EXPERIMENTAL CONDITIONS: Field study; no cultivation
EFFECTS: Effective against all grasses tested at 4.0 lb/A
COMMENTS: Postemergence treatments generally less effective on crabgrass and panicum and more effective on foxtails; sometimes only 2 or 3 plant species tested
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

<60>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-2-propynl)-N-phenyl-
CHEMICAL COMMON NAME: Prynachlor
PLANT: Onion (ALLIUM CEPA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Preemergence treatments 1 day after planting
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared April 16 of the following year; seeding 1 day after seedbed preparation; single row plots 3 by 28 ft; herbicides applied in 2 ft band over row; irrigation as needed; weed ratings, 123 days after seeding; onion harvest, more than 5 months after seeding--34 bulbs from untreated control
EFFECTS: Poor pigweed control, good lambsquarter control, complete foxtail control; 86 onion bulbs harvested
COMMENTS: Prynachlor in combination with other herbicides also tested
REFERENCE: Noll, C.J., "Evaluation of Herbicides for Weed Control in Seeded Onions Grown in Mineral Soils," Proc. Northeast. Weed Sci. Soc. 28:221-223 (1974).

<61>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-2-propynl)-N-phenyl-
CHEMICAL COMMON NAME: Prynachlor
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 4.0 and 6.0 lb/A
APPLICATION METHODS: Preemergence applications principally, but some postemergence applications (alachlor, cyprazine, and cyanazine); 60 gal/A; 40 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1970 to 1972
EFFECTS: Effective control of all grasses
COMMENTS: Preemergence herbicides which controlled large crabgrass also controlled fall panicum; these included: alachlor, linuron, cyanazine and prynachlor; herbicides which did not control large crabgrass and fall panicum included atrazine, cyprazine and dicamba
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

<62>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-2-propynl)-N-phenyl-
CHEMICAL COMMON NAME: Prynachlor
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 3.0 lb/A; EC
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 40 gal/A; 730616 TeeJet spray tip at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Moderate control of weeds with no adverse effect on potatoes
COMMENTS: Preplant incorporated herbicides R-7465, EPTC, and vernolate good single herbicides; increases in herbicidal effectiveness obtained when EPTC and vernolate combined with R-7465; alachlor alone excellent herbicide applied preemergence; increased weed control effectiveness resulted when this herbicide combined with linuron, chlorbromuron, metobromuron, methazole, or dinoseb
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

<63>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-2-propynl)-N-phenyl-
CHEMICAL COMMON NAME: Prynachlor
PLANT: Broadleaf weeds; Grasses; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3.0 and 4.0 lb/A; EC
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Sassafras loam
EFFECTS: Moderate control of weeds with no adverse effects on corn
COMMENTS: Effective combinations were alachlor + atrazine, prynachlor + atrazine, chlorbromuron + atrazine, and chlorbromuron + simazine; atrazine slightly more effective than simazine
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

<64>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-2-propynl)-N-phenyl-
CHEMICAL COMMON NAME: Prynachlor
PLANT: Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Cudweed, low (GNAPHALIUM ULIGONOSA); Broccoli (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Cabbage (BRASSICA OLERACEA); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 2.2, 4.5, and 8.9 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; 5 year period
EFFECTS: Effective control of weeds one year only at all rates but reduced yield of broccoli, brussels sprouts, and cauliflower at highest rates for that year
COMMENTS: Trifluralin, DCPA, and nitrofen gave eratic weed control and must be applied at highest rates of application permitted by label for even average weed control in most years; two new herbicides pryanchlor and DMC 3950 show promise for use on cole crops in Eastern Canada
REFERENCE: Ivany, J.A. and J.A. Cutcliffe, "Herbicides for Cole Crops in Eastern Canada," Proc. Northeast. Weed Sci. Soc. 27:194-199 (1973).

<65>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-2-propynl)-N-phenyl-
CHEMICAL COMMON NAME: Prynachlor
PLANT: Corn (ZEA MAYS); Nutsedge, purple (CYPERUS ROTUNDUS); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); (PANICUM ZIZANOIDES); Morningglory (IPOMOEA sp.); Bermudagrass, common (CYNODON DACTYLON); (KALLSTROEMIA MAXIMA); (SORGHUM VERTICILLIFLORUM)
EXPERIMENTAL DOSE: 10 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Clay loam soil; field tests
EFFECTS: 64% maize yield compared to clean-weeded control; poor weed control
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<66>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-2-propynl)-N-phenyl-
CHEMICAL COMMON NAME: Prynachlor
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Weeds; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2, 4, and 6 lb/A
APPLICATION METHODS: Preemergence spray at 32 gpa water in one trial and 25 to 40 gpa water in another
EXPERIMENTAL CONDITIONS: Replicated field trials; replicated plot size of 0.009 A; silt loam and clay loam soils
EFFECTS: Adequate barnyard grass and other weed control at 4 lb/A; no significant corn injury
COMMENTS: On basis of logarithmic dosage trials, 3.1 lb/A minimum critical level for weed control
REFERENCE: Wallace, E.G.R., "Control of Barnyard Grass and other Weeds with Prynachlor in Maize Crops," Proc. N. Z. Weed Pest Control Conf. 24:97-100 (1971).

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<67>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-2-propynl)-N-phenyl-
CHEMICAL COMMON NAME: Prynachlor
PLANT: Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.0 and 4.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Freehold sandy loam
EFFECTS: Moderate control of weeds with no adverse effect on corn yield
COMMENTS: Combinations of alachlor and atrazine, alachlor and simazine, and alachlor and cyanazine resulted in better control of fall panicum than single treatments of atrazine, simazine, or cyanazine; best overall control obtained with alachlor
REFERENCE: Herman, D.J. and R.D. Ilnicki, "Weed Control in Corn by Alachlor and Prynachlor in Combination with Some S-Triazine Herbicides," Proc. Northeast. Weed Sci. Soc. 27:41-46 (1973).

<68>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl)-2-propynl)-N-phenyl-
CHEMICAL COMMON NAME: Prynachlor
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 8.0 kg/ha
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Moderate control of weeds and moderate vigor reduction in peanuts
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit further testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<69>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl-2-propynyl)-N-phenyl-
CHEMICAL COMMON NAME: BAS-2903-H
PLANT: Plants; Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 3.0 and 6.0 lb/A
APPLICATION METHODS: Posttransplant (same day)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--aprox. 3 mos
EFFECTS: Effective weed control but fewer normal chrysanthemums and no effect on yield
COMMENTS: Excellent weed control obtained with number of herbicides; only R-7465 and diphenamid used as soil surface treatments and bensulide gave unsatisfacotry control; various herbicide treatments found to affect growth of chrysanthemum plants to different degrees
REFERENCE: Welker, W.V. and J.C. Cialone, "An Evaluation of Herbicides for the Control of Weeds in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 26:51-54 (1972).

<70>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl-2-propynyl)-N-phenyl-
CHEMICAL COMMON NAME: Basamaize
PLANT: Corn (ZEA MAYS); Plants
EXPERIMENTAL DOSE: 2.0, 3.0, 4.0, and 4.5 lb/A
APPLICATION METHODS: Spray; 40 gal/A at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sarpy fine sandy loam; time period--1970 and 1971
EFFECTS: Moderate control of weeds with moderate initial injury to and reduced yield of corn
COMMENTS: No herbicide used significantly increased yield; cleanly cultivated plots yielded significantly more than plots treated with basamaize, propachlor, or bladex
REFERENCE: Greig, J.K. and M. Asif, "Effects of Herbicides on Yield, Weed Control, and Nutrient Content of Sweet Corn", Proc. N. Centr. Weed Contr. Conf. 26:99-101 (1971).

<71>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl-2-propynyl)-N-phenyl-
CHEMICAL COMMON NAME: BAS-2903-H
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.0 lb/A; EC
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: Moderate control of grasses; effective control of pigweed; no adverse effect on corn
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<72>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methyl-2-propynyl)-N-phenyl-
CHEMICAL COMMON NAME: BAS-2900
PLANT: Crabgrass (DIGITARIA TIMORENSIS); Crabgrass (DIGITARIA HORIZONTALIS); (AGERATUM CONYZOIDES); Foxtail, bristly (SETARIA PALLIDE-FUSCA); Nightshade, black (SOLANUM NIGRUM); Nutsedge, purple (CYPERUS ROTUNDUS); Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 1.34 to 5.38 kg/ha
APPLICATION METHODS: Preemergence spray

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EXPERIMENTAL CONDITIONS: Field studies; October trial; weed assessment in cane fields 105 days after spraying
EFFECTS: 52.9 to 57.7% weed control; cane growth reduction and occasional cane germination reduction
COMMENTS: Weed results tabulated together; BAS 2900 rated as not promising
REFERENCE: McIntyre, G., "Weed Control 1. Evaluation of New Herbicides," Mauritius Sugar Ind. Res. Inst., Annu. Rep. 18:117-119 (1970).

<73>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Purslane, common (PORTULACA OLERACEA); Lamb's-quarters (CHENOPODIUM ALBUM); Horseweed (ERIGERON CANADENSIS); Carnation; Dwarf mallow (MALVA ROTUNDIFOLIA); Bluegrass, annual (POA ANNUA); Buttercup, Bermuda (OXALIS CEPNUA); Pigweed, prostrate (AMARANTHUS BLITOIDES)
EXPERIMENTAL DOSE: 6 and 12 lb/A
APPLICATION METHODS: Spray application to ground bed; incorporation to about one-half in. depth by raking
EXPERIMENTAL CONDITIONS: Field study; soil--Sorrento fine sandy loam with one in cedar shavings mixed to 4-6 in. depth by rototilling; plants set seven days after herbicide application; evaluation--3, 8, and 12 wks (weed counts and crop phytotoxicity) and 6, 7, and 8 mos (crop yield)
EFFECTS: Effective control at both application rates with little effect on carnation harvest or observable phytotoxicity
COMMENTS: Four herbicides evaluated; propachlor appeared to be promising preemergence and preplant herbicide for control of wide variety of weeds in carnation culture; miscellaneous additional weeds also effectively controlled at herbicide rates cited above
REFERENCE: Bivins, J.L., C. Elmore, and A. Lange, "Chemical Weed Control in Carnation Transplants," Calif. Agric. 26(8):14-15 (1972).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Nutsedge (CYPERUS sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Pigweed (AMARANTHUS sp.); Pigweed, spiny (AMARANTHUS SPINOSUS); Jimsomweed (DATURA STRAMONIUM); Purslane, common (PORTULACA OLERACEA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.0 to 6.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 65% WP formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of most weeds with good corn tolerance
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<75>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 65% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate control of all weeds with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<76>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3) and 10(-4)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active.
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<77>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Shepherd's purse (CAPSELLA BURSA-PASTORIS); Chickweed, common (STELLARIA MEDIA); Cabbage (BRASSICA OLERACEA); Ragwort, common (SENECIO VULGARIS); Bluegrass, annual (POA ANNUA); Bird's eye (VERONICA PERSICA)
EXPERIMENTAL DOSE: 4.4 kg/ha
APPLICATION METHODS: Postplanting application as an overall treatment by knapsack sprayer at 730 l/ha volume

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<77> CONT.
EXPERIMENTAL CONDITIONS: Medium sandy clay loam; 5 rows per plot, plot length 3 m in early experiments and 5.5 m in later experiments with 6 and 4 replicates of each treatment respectively; 3 experiments, no herbicides in experiment 2
EFFECTS: Experiment 1--bluegrass reduced considerably, only partially effective on chickweed, weed proportions at harvest similar to those on untreated plots, no injury to crop; experiment 3--partial weed control, main effect was to delay onset of weed competition, no crop injury
COMMENTS: Propachlor not as effective as trifluralin
REFERENCE: Lawson, H.M., "Weed Competition in Transplanted Spring Cabbage," Weed Res. 12:254-267 (1972).

<78>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 12 locations in IA
EFFECTS: Moderate weed control
COMMENTS: Preplant-incorporated treatments more consistent in grass and broadleaf weed control than preemergence treatments; preplant-incorporated herbicide butylate plus R-25788 and EPTC plus R-25788 and preplant or preemergence chemical such as alachlor and CGA-24705 provided good to excellent grass control but needed assistance of broadleaf controlling herbicides such as atrazine, cyanazine, and procyazine
REFERENCE: Studt, D.M. and V.M. Jennings, "Corn Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:146-150 (1975).

<79>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: 1 ppm caused less than 50% inhibition of both shoot and root; 10 ppm caused 50% or greater inhibition in oat and cucumber shoot but less than 50% in sorghum shoot and root and in oat shoot
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<80>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Weeds; Pine, loblolly (PINUS TAEDA)
EXPERIMENTAL DOSE: 6 lb/A
APPLICATION METHODS: Preemergence, sprayed over newly planted pine seedlings at 40 psi and 20 gpa
EXPERIMENTAL CONDITIONS: Field trials, Oklahoma; randomized plots, 10 X 100 ft; fine sandy loam and sandy clay loam soil; 8 wk evaluations
EFFECTS: Two sites, 65 and 60% weed control; relatively non-toxic to pines
COMMENTS: No specific phytotoxic information on pines
REFERENCE: O'Loughlin, T.C., L.R. Nelson, J.D. Walstad, J.H. Breland, and J.E. Voeller, "Velpar and Other Preemergence Herbicides for Use in Establishment of Loblolly Pine Plantations," Proc. South. Weed Sci. Soc. 29:262-268 (1976).

<81>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Onion (ALLIUM CEPA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 5 lb/A
APPLICATION METHODS: Preemergence 1 day after planting and postemergence at 30 and 59 days after planting
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared April 16 of the following year; seeding 1 day after seedbed preparation; single row plots 3 by 28 ft; herbicides applied in 2 ft band over row; irrigation as needed; weed ratings, 123 days after seeding; onion harvest, more than 5 months after seeding--34 bulbs from untreated control
EFFECTS: Good pigweed control, complete control of lambsquarters and foxtail; 104 bulbs harvested
COMMENTS: Preemergence and postemergence treatments on same plot; propachlor in combination with other herbicides also tested
REFERENCE: Noll, C.J., "Evaluation of Herbicides for Weed Control in Seeded Onions Grown in Mineral Soils," Proc. Northeast. Weed Sci. Soc. 28:221-223 (1974).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Corn (ZEA MAYS); Plants
EXPERIMENTAL DOSE: 4.5 and 6.0 lb/A
APPLICATION METHODS: Spray; 40 gal/A at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sarpy fine sandy loam; time period--1970 and 1971
EFFECTS: Moderate control of weeds and slight to moderate damage of sweet corn with some reduction in corn yield
COMMENTS: No herbicide used significantly increased yield; cleanly cultivated plots yielded significantly more than plots treated with basamaize, propachlor, or bladex
REFERENCE: Greig, J.K. and M. Asif, "Effects of Herbicides on Yield, Weed Control, and Nutrient Content of Sweet Corn", Proc. N. Centr. Weed Contr. Conf. 26:99-101 (1971).

<93>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Preemergence April application
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: No excessive legume injury; weeds not controlled
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<84>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Corn (ZEA MAYS); Chickweed, common (STELLARIA MEDIA); Speedwell (VERONICA sp.); Knotweed (POLYGONUM AVICULARE); Fool's parsley (AETHUSA CYNAPIUM)
EXPERIMENTAL DOSE: 4.48 and 8.96 kg/ha
APPLICATION METHODS: Preemergence applications with an Oxford Precision Sprayer at 2.11 kg/cm (2) pressure and 225 l./ha volume
EXPERIMENTAL CONDITIONS: Maize sown in plots of 3 rows, 3.7 m long and 61 cm apart; Oxford clay soil; hand weeded controls; weeds assessed in June after May 2 applications; experiments made under wet conditions
EFFECTS: 4.48 kg/ha gave 83 % chickweed, 100 % speedwell, and 79 % knotweed control; 8.96 kg/ha gave 91 % chickweed, 99 % speedwell and 93 % knotweed control; both rates gave insignificant fools-parsley control; no significant effect on maize yield
COMMENTS: Results also reported of effectiveness of some herbicide combinations
REFERENCE: Ludwig, J.W., "The Use of a Low Dose of Atrazine Alone and in Mixtures with Other Herbicides in the Maize Crop," Weed Res. 13:12-18 (1973).

<85>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Cudweed, low (GNAPHALIUM ULIGONOSA); Broccoli (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Cabbage (BRASSICA OLERACEA); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 6.5 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; 5 year period
EFFECTS: Moderate (3 years) to effective (one year) control of weeds with reduced yield of brussels sprouts and cabbage in only one of four years
COMMENTS: Trifluralin, DCPA, and nitrofen gave eratic weed control and must be applied at highest rates of application permitted by label for even average weed control in most years; two new herbicides pryanchlor and DMC 3950 show promise for use on cole crops in Eastern Canada
REFERENCE: Ivany, J.A. and J.A. Cutcliffe, "Herbicides for Cole Crops in Eastern Canada," Proc. Northeast. Weed Sci. Soc. 27:194-198 (1973).

<86>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Pea, sweet (PISUM SATIVUM); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Mustard, wild (BRASSICA KABER); Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 1X10(-5)M (pea germination); 4.48 kg/ha (field)
APPLICATION METHODS: Solution addition to pea seed (germination); field spray 187 l/ha at 183 kg/sq cm; preemergence application
EXPERIMENTAL CONDITIONS: Greenhouse study--plastic cup culture (germination); silica sand; 21 C (day) and 17 C (night), evaluation time-21 days; field study; soil--Plano silt loam, pH-6.3, evaluation times--21 days and at harvest
EFFECTS: No adverse effect on pea and effective control of all weeds in field
COMMENTS: Field trials conducted over 3-yr period demonstrated that all eight herbicides successfully controlled weeds; use of trifluralin resulted in lowest shelled pea yields; significant reductions in yield occurred from trifluralin in 1973 and 1975 when compared with the untreated checks
REFERENCE: Harvey, R.G. and G.L. Jacques, "Dinitroaniline Herbicides for Weed Control in Peas," Weed Sci. 25(3):256-259 (1977).

<87>
<87>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Broadleaf weeds; Grasses; Onion (ALLIUM CEPA); Leek (ALLIUM PORRUM); Cauliflower (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Rape (BRASSICA CAMPESTRIS); Turnip (BRASSICA RAPA); Rutabaga (BRASSICA NAPOBRASSICA)
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A; 65% WP and 20% G
APPLICATION METHODS: Preemergence spray and granule broadcast
EXPERIMENTAL CONDITIONS: Field study; time period--1969 to 1972; 22 locations
EFFECTS: Moderate to effective weed control with few adverse effects on crop plants
COMMENTS: Alachlor and propachlor performed differently in trials from 1969 to 1972; propachlor proved safer chemical on crops in both a WP and granular formulations; alachlor more damaging, but most of damage to brassicas only transient
REFERENCE: Hodgkinson, H.D., "Weed Control in Fodder Brassicas and Vegetables Using Granular Alachlor and Propachlor," Proc. 11th Weed Cont. Conf. 11:150-157 (1972).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Rose, wild (ROSA sp.); Plants
EXPERIMENTAL DOSE: 3.9 lb/A
APPLICATION METHODS: Postemergence
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate weed control with no adverse effect on bush roses
COMMENTS: Terbacil, atrazine, propachlor, and aziprotryne gave satisfactory weed control except last two which failed to control cruciferous weeds
REFERENCE: Roberts, L. and D.C. Harris, "Use of Terbacil, Atrazine and Other Herbicides in Bush Rose Production," Proc. 11th. Br. Weed Cont. Conf. 11(2):632-634 (1972).

<89>
CHEMICAL NAME: Acetamide, 2-chloro-N-(1-methylethyl)-N-phenyl-
CHEMICAL COMMON NAME: Propachlor
PLANT: Broadleaf weeds; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 3.36 kg/ha
APPLICATION METHODS: Pre-plant incorporated, preemergence, or postemergence sprays; 280 l./ha at 2 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1972 and 1973
EFFECTS: Moderate weed control with no adverse effect on beet
COMMENTS: Broadleaf weed control achieved in table beets with cycloate, CNP, pebulate, lenacil, pyrazon, IMC 3950, TCA + pyrazon, and pebulate followed by pyrazone; fair weed control achieved with EPTC, propachlor, and solubor; poor weed control obtained from CDEC, chlorpropham, pyrazon, and TCA; yields expressed as $/ha or tons/ha reduced by chlorpropham, lenacil, CNP, and TCA
REFERENCE: Phatak, S.C. and D.J. Cantliffe, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Table Beets," Hortsci. 10(3):271-273 (1975).

<90>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: Metolachlor
PLANT: Panicum, fall (PANICUM DICHOTOMIFLORUM); Grasses; Broadleaf weeds; Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Preplant incorporated and preemergence
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam; time period--1975 and 1976
EFFECTS: At 3.0 lb/A in both applications, effective control of grass weeds and moderate control of broadleafs but reduced alfalfa yield
COMMENTS: Dinoseb, metolachlor, and methazole significantly thinned out alfalfa seedings; benefin, EPTC, profluralin, and butralin were outstanding treatments in grassy weed control; Vel 5052 did good job in controlling fall panicum and other grassy weeds but poor in broadleaf weed control
REFERENCE: Vengris, J. "Annual Weed Control in Alfalfa New Seedlings," Proc. Northeast. Weed Sci. Soc. 31:99-103 (1977).

<91>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: CGA-24705
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Preemergence and preplant incorporated (4 in. depth) sprays; 15 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective control of nutsedge; preplant incorporated application more effective
COMMENTS: Cyperquat and bentazon in postemergence application most effective herbicides, and CGA-24705 and U-44344 in preplant incorporated application most effective; perfluidone most effective preemergence application
REFERENCE: Kurtz, W.L. and E.W. Stroube, "Control of Yellow Nutsedge by Various Herbicides," Proc. N. Cent. Weed Contr. Conf. 30:59 (1975).

<92>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: CGA-24705
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 1.5, 2.0, 2.5, and 3.0 lb/A
APPLICATION METHODS: Preplant incorporated (disc) and preemergence sprays 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 12 locations in IA
EFFECTS: Effective control of grasses and moderate control of broadleaf weeds; preemergence application was more effective
COMMENTS: Preplant-incorporated treatments more consistent in grass and broadleaf weed control than preemergence treatments; preplant-incorporated herbicide butylate plus R-25788 and EPTC plus R-25788 and preplant or preemergence chemical such as alachlor and CGA-24705 provided good to excellent grass control but needed assistance of broadleaf controlling herbicides such as atrazine, cyanazine, and procyazine
REFERENCE: Studt, D.M. and V.M. Jennings, "Corn Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:146-150 (1975).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: CGA-24705
PLANT: Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA LUTESCENS); Foxtail, green (SETARIA VIRIDIS); Sunflower (HELIANTHUS ANNUUS); Velvetleaf (ABUTILON THEOPHRASTI); Venice mallow (HIBISCUS TRIONUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed (AMAPANTHUS sp.); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.5 and 3.0 lb/A
APPLICATION METHODS: Preemergence treatment; 1.5 gal capacity plot sprayer regulated to apply 30 gal per acre; 6% EC formation
EXPERIMENTAL CONDITIONS: Test compound mixed with water to make 1 gal of spray solution; 3 replicates; randomized complete block design; 4 to 5 rows wide by 40 ft long; multiple test locations
EFFECTS: No soybean injury reported; grass control--92% at both rates; broadleaf weed control--69% at 3.0 lb/A, no data for 2.5 lb/A
COMMENTS: Foxtails--grasses; other weeds--broadleaf; combinations of herbicides also tested
REFERENCE: Seim, A.L. and V.M. Jennings, "Soybean Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:54-58 (1975).

<94>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: Metolachlor
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Grasses
EXPERIMENTAL DOSE: 2.5 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Moderate control of broadleafs and quackgrass with effective control of other weed grasses and slight reduction of potato yield
COMMENTS: Metolachlor applied preemergence and penoxalin applied layby did not provide satisfactory control of broadleaved weeds; none of the drag-off treatments with dinitramine, USB-3153, or trifluralin controlled broadleaved weeds; USB-3153 and trifluralin applied at drag-off did not give satisfactory control of quackgrass
REFERENCE: Murphy, H.J. and T. Gajewski, "Effect of Several Herbicides Applied Preemergence, at Drag-Off and Layby on Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 31:176-179 (1977).

<95>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: CGA 24705
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1, 2, and 3 lb/A
APPLICATION METHODS: Preemergence treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: Minor vigor and stand reduction of soybeans; excellent weed control at all rates exept 1 lb/A which gave only fair lambsquarters control
COMMENTS: Herbicide combinations also tested
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<96>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: CGA-24705
PLANT: Crabgrass (DIGITARIA ISCHAEMUM); Bluegrass, Kentucky (POA PRATENSIS); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 4.48 to 6.72 kg/ha; 50% WS and 2.3% G
APPLICATION METHODS: Preemergence spray (40 psi and 50 gal/A) and granule broadcast
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; evaluation time--up to 5 mo
EFFECTS: Moderate crabgrass control with slight to moderate damage of turfgrasses
COMMENTS: Best control of crabgrass in both turf species obtained by DCPA, butralin, AC-92390, and prosulfalin; all rates of granular HOE-22870 provided good crabgrass control in red fescue; in bluegrass, HOE-22870 controlled crabgrass only at the high rate or when the low rate was reapplied
REFERENCE: Watschke, T.L., D.J. Wehner, and J.M. Duich, "Pre- and Postemergence Crabgrass Control in Turf," Proc. NE Weed Sci. Soc. 30:358-366 (1976).

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<97>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: CGA-24705
PLANT: Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1.0 - 4.0 lb/A
EXPERIMENTAL CONDITIONS: Field study; 5 international sites
EFFECTS: More effective seed germination inhibitor for grasses (generally, 2.0 lb/A) than for broadleaf weeds (generally 3.0 lb/A); tolerance of corn, soybean, and peanut at 3.0 to 4.0 lb/A
COMMENTS: In combination with atrazine, long duration of grass activity of CGA 24705, together with crop competition, ensured season-long weed control; grasses which germinate late in the season, e.g. DIGITARIA SANGUINALIS kept out
REFERENCE: Gerber, H.R., G. Miller, and L. Ebner, "CGA 24705, a New Grasskiller Herbicide," Proc. 12th. Br. Weed Cont. Conf. 2:787-794 (1974).

<98>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: CGA-24705
PLANT: Pea, Southern (LATHYRUS sp.); Bean, lima (PHASEOLUS LIMENSIS); Goosegrass (ELEUSINE INDICA); Crabgrass, large (DIGITARIA SANGUINALIS); Purslane, common (PORTULACA OLERACEA); Pigweed, smooth (AMARANTHUS HYBRIDUS); Pigweed, spiny (AMARANTHUS SPINOSUS)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: Preplant incorporated and preemergence treatments at 30 psi in 20 gpa water
EXPERIMENTAL CONDITIONS: Field studies; 4 rows 25 ft long in each plot, 2 rows of each crop; crop vigor and weed control assessed; trifluralin used for chemical check
EFFECTS: No crop vigor reduction; significant pea yield reduction from preplant incorporated 2.0 lb/A, other treatments gave no significant reduction compared to trifluralin check; good grass and excellent pigweed control but moderate purslane control
REFERENCE: Brown, J.F. and H.D. Swingle, "Herbicide Evaluation in Vegetable Crops," Proc. South. Weed Sci. Soc. 30:168-175 (1977).

<99>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: CGA 24705
PLANT: Potato (SOLANUM TUBEROSUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 2.0 to 4.0 lb/A
APPLICATION METHODS: Preemergence, pre-plant incorporated, or postemergence sprays; 30 to 35 lb/sq in at 18 to 43 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Haven loam
EFFECTS: Preplant, 3.0 lb/A--effective weed control with no adverse effect on potatoes
COMMENTS: Outstanding treatments were CGA 24705 applied preemergence or pre-soil incorporated, maintaining 90% control or better for at least three months; results excellent also with EPTC, alachlor, napropamide, and FMC 25213; several herbicides in combination also effective
REFERENCE: Selleck, G.W. and L.E. Weber, "Herbicide Trials for Yellow Nutsedge in Potatoes on Long Island," Proc. NE Weed Sci. Soc. 30:239-242 (1976).

<100>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: CGA-24705
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.68, 2.24, 2.80, 3.36, and 4.48 kg/ha; 6% EC
APPLICATION METHODS: Preplant incorporated and preemergence sprays; incorporation by discing within 6 hr
EXPERIMENTAL CONDITIONS: Field study; soils--silt loam and loam
EFFECTS: Generally effective control of nutsedge at all rates; preplant application more effective than preemergence; slight injury to corn and soybean at higher rates
COMMENTS: Corn and soybean tolerance to CGA-24705 excellent in all cases at rates providing acceptable control of yellow nutsedge; CGA-24705 more active than alachlor, regardless of method of application; although more effective against yellow nutsedge when applied preplant incorporated, CGA-24705 gave acceptable control following preemergence treatments
REFERENCE: Higgins, E.P., M.G. Schnappinger, and S.W. Pruss, "Yellow Nutsedge Control with CGA-24705 in Corn and Soybeans, "Proc. Northeast. Weed Sci. Soc. 29:9-16 (1975).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: CGA-24705
PLANT: Broadleaf weeds; Grasses; Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.4 to 3.3 kg/ha
APPLICATION METHODS: Preplant, preplant incorporated (6-7.5 cm depth), preemergence, and postemergence sprays; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: In preplant incorporation at about 3.0 kg/ha, moderate control of broad leaf weeds and effective control of grass weeds with no adverse effect on tomato yield; weed control about same in preemergence application
COMMENTS: In direct-seeded tomatoes, FMC 25213 showed promise for providing broad spectrum weed control; CGA 24705 and Hoe 23408 found selective for annual grasses; with transplanted tomatoes, oxidiazon preplant and Hercules 26905 preplant incorporated provided effective weed control in addition to compounds mentioned for seeded crop
REFERENCE: Henne, R.C., "New Compounds with Potential for Weed Control in Tomatoes," Proc. Northeast. Weed Sci. Soc. 31:207-214 (1977).

<102>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: Metolachlor
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Goosegrass (ELEUSINE INDICA); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum (PANICUM LAEVIFOLIUM); Dayflower (COMMELINA BENGHALENSIS); Pigweed (AMARANTHUS sp.); Marigold (TAGETES MINUTA); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 1.0, 2.0, and 3.0 kg/ha
APPLICATION METHODS: Preemergence spray; 250 l./ha; combined applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective control of all weeds except COMMELINA
COMMENTS: Formulation gave wide spectrum selective weed control in maize with residual action of up to 12 weeks on most weeds; shallow cultivation up to 6 weeks after application did not materially affect residual action
REFERENCE: Jooste, J.W. and J.J. Van Biljon, "Metolachlor + Atrazine a Combination Pre-Emergence Herbicide for Broad Spectrum Weed Control in Maize," Crop Protect. 5:85-90 (1976).

<103>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-
CHEMICAL COMMON NAME: CGA-24705
PLANT: Grasses; Broadleaf weeds; Purslane, common (PORTULACA OLERACEA); Crabgrass (DIGITARIA sp.); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Groundsel, common (SENECIO VULGARIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Azalea (RHODENDRON OBTUSUM); Andromeda (PIERIS JAPONICA); Maple, amur (ACER GINNALA); Maple, Japanese (ACER PALMATUM); Juniper (JUNIPERUS CHINENSIS); Holly (ILEX CRENATA); Privet, California (LIGUSTRUM OVALIFOLIUM); Firethorn (PYRACANTHA COCCINEA); Yew (TAXUS INTERMEDIA); Hemlock, Canadian (TSUGA CANADENSIS); Pine, Japanese black (PINUS THUNBERGII); Honeysuckle, gold flame (LONICERA HECKROTTI); Dogwood, flowering (CORNUS FLORIDA); Goldenbells (FORSYTHIA INTERMEDIA); Hydrangea (HYDRANGEA PANICULATA)
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A; 4% EC
APPLICATION METHODS: Postemergence spray, TeeJet nozzle; shaker broadcast for granular
EXPERIMENTAL CONDITIONS: Field study; nursery liners
EFFECTS: Effective control of all weeds at 4.0 lb/A with varied but generally slight damage to ornamentals
COMMENTS: Alachlor and alachlor plus simazine combinations gave nearly complete weed control without injury to test plants; combinations of other herbicides with simazine also effective; Velsicol 5052 very effective against all plants, including nursery plants
REFERENCE: Bing, A., "1976 Preemergence Weed Control in Nursery Liners," Proc. Northeast Weed Sci. Soc. 31:320-325 (1977).

<104>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)
CHEMICAL COMMON NAME: Alachlor
PLANT: Soybean (GLYCINE MAX); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Lamb's-quarters (CHENOPODIUM ALBUM); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 2.0 lb/A; 4% EC
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Bucks silt loam
EFFECTS: Effective control of all weeds except lambsquarters (moderate control) with very slight adverse effect on soybean and no effect on yield
COMMENTS: RH-2512 preemergence provided excellent control of large crabgrass, fall panicum, common lambsquarters, redroot pigweed, and smallflower galinsoga; RH-2915 preemergence provided weed control equivalent to RH-2512
REFERENCE: Hartnett, J.P., "Weed Control in Soybeans with RH-2512 and RH-2915," Proc. Northeast. Weed Sci. Soc. 29:4-8 (1975).

<105>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 2.00 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: In preemergence application, complete control of weeds was obtained but crop plants moderately damaged
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<106>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 50 gal at 30 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1969 to 1971
EFFECTS: In postemergence application, effective control of broadleafs and moderate control of grasses with

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<106> CONT.
no adverse effect on potato yield
COMMENTS: All treatments rated good to excellent in broadleaf weed control; all chemical treatments equal or superior to cultivation in control of broadleaf weeds
REFERENCE: Swingle, H.D. and C. Mullins, "Herbicide Trials with Irish Potatoes," Proc. S. Weed Sci. Soc. 26:256-258 (1973).

<107>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Plants; Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Posttransplant (same day)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--aprox. 3 mos
EFFECTS: Effective weed control with no adverse effect on chrysanthemum yield at 2.0 lb/A
COMMENTS: Excellent weed control obtained with number of herbicides; only R-7465 and diphenamid used as soil surface treatments and bensulide gave unsatisfacotry control; various herbicide treatments found to affect growth of chrysanthemum plants to different degrees
REFERENCE: Welker, W.V. and J.C. Cialone, "An Evaluation of Herbicides for the Control of Weeds in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 26:51-54 (1972).

<108>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, large (DIGITARIA SANGUINALIS); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.12, 1.68, 2.24, and 3.36 kg/ha
APPLICATION METHODS: Preemergence spray; 500 l./ha; EC formulation
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras sandy loam; pH--5.5; time period--1972 and 1973
EFFECTS: Effective control of weeds (except lambsquarters, moderate control) with slight initial injury to snap beans but no adverse effect on yield
COMMENTS: Preemergence applications of fluorodiphen, alachlor, and alachlor with dinoseb effected good control of fall panicum, large crabgrass, and redroot pigweed in snap beans; combination of alachlor with dinoseb provided good control of lambsquarters; snap bean injury resulted from both fluorodiphen and alachlor and was influenced by preemergence rainfall
REFERENCE: Wilson, H.P., J.N. Belote, and T.P. Hines, "Activities of Alachlor and Fluorodiphen in Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:161-166 (1974).

<109>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Peanut (ARACHIS HYPOGAEA); Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Violet (VIOLA sp.)
EXPERIMENTAL DOSE: 2.0, 3.0, and 4.0 lb/A
APPLICATION METHODS: Preplant spray; 13 to 38 gal/A; postemergence spray; 30 psi
EXPERIMENTAL CONDITIONS: Field study; locations in 5 states (AL, FL, GA, NC, and VA); time period--1971 and 1972; evaluation times--varied, up to 161 days
EFFECTS: Effective control of grass weeds and little or no control of broadleafs with very slight effect on peanut in postemergence applications
COMMENTS: Alachlor/dinoseb applied postemergence over vernolate improved control of Florida beggarweed, sicklepod, fall panicum and crabgrass, and over benefin improved control of Florida beggarweed, sicklepod, and yellow nutsedge; alachlor/dinoseb applied postemergence provided fair to good Florida beggarweed control
REFERENCE: Andrews, O.N., F.D. Timmons, W.L. Currey, and G.A. Buchanan, "An Evaluation of Alachlor and Dinoseb Applied Postemergence in Peanuts," Proc. South. Weed Sci. Soc. 26:106-118 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Broadleaf weeds; Grasses; Nutsedge, yellow (CYPERUS ESCULENTUS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 38 gal/A at 20 psi; 4% EC Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of all weeds with no adverse effect on potato yield
COMMENTS: Incorporated type treatments effective in giving season-long annual grass control, but pre-emergence treatments were not; EPTC only effective material on heavy stand of nutsedge
REFERENCE: Sanok, W.J., "Evaluation of Herbicides for Control of Weeds in Long Island Potatoes-1973," Proc. Northeast. Weed Sci. Soc. 28:282-286 (1974).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Carpetweed (MOLLUGO VERTICILLATA); Ladysthumb (POLYGONUM PERSICARIA); Crabgrass, large (DIGITARIA SANGUINALIS); Chickweed, common (STELLARIA MEDIA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Shallot (ALLIUM ASCALONICUM)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: Postemergence spray; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Plymouth sandy loam; supplemental irrigation
EFFECTS: Effective control of all weeds with slight shallot growth reduction at 2.0 lb/A

<111> CONT.
COMMENTS: All herbicides resulted in varying degrees of weed control but no unacceptable phytotoxicity to crop; alachlor and nitrofen provided good to excellent control of weeds; methazole appeared effective on broader spectrum of weeds than nitrofen
REFERENCE: Sanok, W.J., G.W. Selleck, and W.L. Kline, "Herbicides for Weed Control in Onions and Shallots," Proc. Northeast. Weed Sci. Soc. 31:261-265 (1977).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 38 gal/A at 20 psi; 4% EC Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of grass weeds and moderate control of broadleafs with no adverse effect on potato yield
COMMENTS: Metribuzin alone or in combination with other materials very effective in controlling barnyard grass and lady's thumb; other chemicals also effective in maintaining commercially acceptable weed control throughout season
REFERENCE: Sanok, W.J. and L.E. Weber, "Evaluation of Potato Herbicides on Long Island 1974," Proc. Northeast. Weed Sci. Soc. 29:316-318 (1975).

<113>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Purslane, common (PORTULACA OLERACEA); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 2,3,4, and 6 lb/A
APPLICATION METHODS: Formulation -- 10% granules and 4 lb/A emulsifiable concentrate; granules applied with auger feed applicator calibrated for each treatment; sprays applied in 50 gallon solution per acre; postplanting application
EXPERIMENTAL CONDITIONS: Chrysanthemums commercially grown two seasons on gravelly sandy loam; roots dipped in activated carbon to reduce herbicide injury to chrysanthemums
EFFECTS: 2 lb/A sprays gave one month weed control without chrysanthemum injury; sprays at 4 lb/A injured chrysanthemums; no injury to chrysanthemums from 4 lb/A granular application during first growing season; 3 lb/A granules gave one month weed control and 6 lb/A granules gave longer protection during second growing season but some chrysanthemum injury observed; alachlor granules at 3 pounds/acre retarded chrysanthemum growth, second growing season; supplemental 2 lb/A spray caused curling of chrysanthemum leaftips during first growing season
COMMENTS: During first growing season, flooding affected herbicide incorporation and chrysanthemum growth; no treatment controlled weeds all season without injury to chrysanthemums; use of multiple applications not thoroughly investigated; suggestions given for sequential herbicide use
REFERENCE: Ahrens, J.F., "Weed Control in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 28:386-394(1974).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Crabgrass, large (DIGITARIA SANGUINALIS); Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 2.24 and 4.48 kg/ha
APPLICATION METHODS: Preemergence application with an Oxford Precision Sprayer at a rate of 280 l./ha and at 2 kg/cm2 pressure
EXPERIMENTAL CONDITIONS: Sandy loam soil; spinach plants 10 cm apart in rows 1 m apart; plot -- 3 rows 3 m long; 4 replications of each treatment; weeds per 930 cm were counted; plants harvested from center of each plot 37 days after emergence
EFFECTS: Excellent control of lamb's-quarters, redroot pigweed, and shepherd's purse at either rate and crabgrass at highrate; no effect on spinach yields; significant increase in spinach nitrate of blades and petioles; total nitrogen increased in spinach petioles
COMMENTS: Increase in plant nitrate can result from soil or lowered nitrate reductase activity; authors think that decrease in some phase of nitrate reduction by herbicide action is responsible for nitrate accumulation
REFERENCE: Cantliffe, D.J. and S.C. Phatak, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Spinach," Hortscience 9(5): 470-472 (1974).

<115>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Soybean (GLYCINE MAX); Alfalfa (MEDICAGO SATIVA); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 3.36 kg/ha
APPLICATION METHODS: Preemergence applications with tractor mounted small-plot sprayer in 217 l./ha water at spray pressure of 2.11 kg/cm2
EXPERIMENTAL CONDITIONS: Herbicide applied to cornfield -- 20 soil samples from upper 10.16 cm of soil taken from each experiment 6, 12, 18, and 26 weeks after corn sowing; Bolivia silt loam soil and Keomah silt loam soil; soil samples from each of 4 replications of each treatment combined to form composite samples; 8 seeds of alfalfa, oats or soybeans planted in 4 pots of soil from each treatment; pots placed in growth chamber 25 days -- day length 13 hours
EFFECTS: No effect on alfalfa yields; no significant reduction in oat or soybean yield

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<115> CONT.
COMMENTS: Results suggest that residual injury (carryover injury) is less likely when soybeans rather than oats or alfalfa follow corn; elimination of carryover injury probable by using short-residual herbicides such as alachlor and by combination of small amounts of persistent herbicides (cyprazine or atrazine) with short-residual herbicides
REFERENCE: Fink, R.J., "Phytotoxicity of Herbicide Residues in Soils," Agron. J. 64:804-805 (1972).

<116>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Yew (TAXUS INTERMEDIA); Chickweed, common (STELLARIA MEDIA); Primrose, cut-leaf evening (OENOTHERA LACINIATA); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/A
APPLICATION METHODS: Posttransplant spray; 374 l./ha at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--low flatwood fine sands; subsurface irrigation; time period--1970 to 1974
EFFECTS: Effective control of all weeds at both rates with no adverse effect on cabbage yield
COMMENTS: Most effective weed control obtained with alachlor, alachlor + CDEC, alachlor + DCPA, and DCPA + nitrofen; DCPA effective in controlling dock and chickweed, but controlled evening primrose less effectively; nitrofen provided excellent control of dock and fair to good control of evening primrose.
REFERENCE: Shumaker, J.R., "Chemical Weed Control in North Florida Cabbage," Fla. State Hort. Soc. 87:170-174 (1974).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Mustard, wild (BRASSICA KABER); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate weed control except mustard (effective control) with no adverse effect on LIROPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Cabbage (BRASSICA OLERACEA); Purslane, common (PORTULACA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pineappleweed (MATRICARIA MATRICARIODY)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Preemergence spray; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; supplemental irrigation; crops direct seeded
EFFECTS: Effective control of all weeds but stunting initially of cabbage but no yield reduction
COMMENTS: Outstanding candidates for selectivity in seeded cabbage and control of barnyardgrass, purslane, and pineappleweed were H22234 and oryzalin; alachlor also gave excellent control but initial stunting of cabbage seedlings; by end of the season, phytotoxicity not visible with alachlor or any other treatment.
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicides for Weed Control in Sweet Corn and Cabbage," Proc. Northeast. Weed Sci. Soc. 31:256-260 (1977).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Preemergence spray; 188 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy loam or Cecil clay loam; time period--1969 to 1971
EFFECTS: Effective control of grasses and moderate control of broadleaf weeds with very slight damage to sunflower
COMMENTS: Alachlor applied in combination with either chlorpropham or prometryne satisfactorily controlled grasses and broadleaf weeds in sunflowers planted in April and June from 1969 through 1971; higher percentage of broadleaf weeds controlled with herbicides applied preemergence to sunflowers planted in April than when applied to sunflowers planted in June.
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Preplant or Preemergence on Weeds and Sunflowers," Crop Sci. 12(1):650-653 (1972).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Grasses; Broadleaf weeds; Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Preplant incorporated and preemergence sprays; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 13 locations in Iowa
EFFECTS: Effective control of grasses and moderate control of broadleaf weeds with no adverse effect on soybean; preemergence application more effective than preplant incorporated
COMMENTS: Dinitroaniline chemicals applied at proper rates for organic matter levels present provided good to excellent grass control; rate probably more critical for organic matter on BAS-3901, CG-10832 and

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dinitramine than for trifluralin; organic matter exceedingly critical for nitraline; vernolate provided good grass control and at most locations, better broadleaf control than dinitroaniline chemicals; preplant incorporated plus overlay treatment can increase broadleaf and overall weed control and usually result in less phototoxicity to the crop
REFERENCE: Jennings, V.M., D.W. Staniforth, and W.G. Lovely, "Soybean Herbicide Evaluations Across Iowa in 1973," Proc. N. Cent. Weed Contr. Conf. 28:42-45 (1973).

<121>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplant incorporated (4 in depth) spray; 15 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of nutsedge
COMMENTS: Cyperquat and bentazon in postemergence application most effective herbicides, and CGA-24705 and U-44344 in preplant incorporated application most effective; perfluidone most effective preemergence application
REFERENCE: Kurtz, W.L. and E.W. Stroube, "Control of Yellow Nutsedge by Various Herbicides," Proc. N. Cent. Weed Contr. Conf. 30:59 (1975).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete or near-complete control of shoot emergence at 10(-3), 10(-4), and 10(-5)M; moderate control at 10(-6)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 1.5 and 2 lb/A
APPLICATION METHODS: Spray applied in 40 gpa volume; EC formulation
EXPERIMENTAL CONDITIONS: Sassafras loam soil; plots--4 rows or 14 ft x 20 ft; randomized block design with 3 replications; May 24 planting and August 8 ratings and harvest; center 2 rows of each plot used for yield determination
EFFECTS: 68% broadleaf and 92% grass control at 1.5 lb/A; 79% broadleaf and 92% grass control at 2 lb/A; no significant effect on corn yield; pigweed was effectively controlled better than other broadleaf weeds
COMMENTS: Combination with other herbicides proved more effective than single herbicide treatments
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Potato (SOLANUM TUBEROSUM); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: EC formulation; treatments applied as spray at 30 psi and 40 gpa volume; preemergence applications
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications for each experiment; plot size--4 rows or 12 ft x 20 ft; Sassafras loam soil; center 2 rows harvested for yield determination
EFFECTS: 66% boradleaf and 92% grass control at 1.5 lb/A; 64% broadleaf and 92% grass control at 2 lb/A; no significant effect on potato yield
COMMENTS: Combination with other herbicides increased weed control
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 12 locations in IA
EFFECTS: At 3.0 lb/A, effective control of grasses and moderate control of broadleaf weeds
COMMENTS: Preplant-incorporated treatments more consistent in grass and broadleaf weed control than preemergence treatments; preplant-incorporated herbicide butylate plus R-25788 and EPTC plus R-25788 and preplant or preemergence chemical such as alachlor and CGA-24705 provided good to excellent grass control but needed assistance of broadleaf controlling herbicides such as atrazine, cyanazine, and procyazine
REFERENCE: Studt, D.M. and V.M. Jennings, "Corn Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:146-150 (1975).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.5 lb/A; 4% EC
APPLICATION METHODS: Preemergence spray; combined herbicides and types of application
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7
EFFECTS: Effective control of ragweed and moderate control of other weeds with no damage to cucumber and slight damage to squash
COMMENTS: Control of crabgrass, pigweed, ragweed and lambsquarters in seeded cucumbers and squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence, and preemergence applications of chloramben methyl ester alone; in cucumbers only, bensulide preplant incorporatd + chloramben methyl ester preemergence, bensulide preplant incorporated + dinoseb preemergence over activated charcoal, and nitralin preemergence gave excellent full-season weed control
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 2.5 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays; 60 gal/A; applied singly and in combination in some instances
EXPERIMENTAL CONDITIONS: Field study; no cultivation
EFFECTS: Alachlor alone was effective against all three grasses; atrazine and alachlor in combination were very promising for fall panicum control; postemergence application of alachlor was generally less effective than preemergence application
COMMENTS: Postemergence treatments generally less effective on crabgrass and panicum and more effective on foxtails; sometimes only 2 or 3 plant species tested
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Plants; Stonecrop (SEDUM BREVIFOLIUM); (DELASPERMA ALBA); Ivy, Algerian (HEDERA sp.); (OSTEOSPERMUM FRUT.); Iceplant (CARPOBROTUS EDULE); Periwinkle, large (VINCA MAJOR)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil-sandy loam; evaluation times--1, 2, 6, and 9 mos
EFFECTS: Effective control (up to 3 mos) of weeds with slight damage to ground cover plants
COMMENTS: Use of herbicides significantly less expensive than hand weeding; all herbicide treated plots of iceplant had greater fresh weight and rooting than non-weeded controls; oxadiazon, oryzalin, and nitrofen + nitralin appeared most effective
REFERENCE: Elmore, C.L. and W.A. Humphery, "Preemergence Weed Control in Ground Cover Ornamentals," Proc. West. Soc. Weed. Sci. 27:62-65 (1974).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--1 ppm showed less than 50% inhibition, 10 ppm showed greater than 50% inhibition in all species; shoot--1 ppm showed less than 50% inhibition in oat but greater than 50% in sorghum, 10 ppm

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showed greater than 50% inhibition in both sorghum and oat
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Johnson grass (SORGHUM HALEPENSE); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: 2-year experiment; Loring silt loam, alachlor applied as check on seedling johnsongrass control; 13.3 X 40 ft plots
EFFECTS: 40% johnsongrass control first year, 65% second year; corn yield no significantly different from weed-free check
REFERENCE: Jeffery, L.S., J.T. Connell, and T.H. Morgan, Jr., "Johnsongrass Control in Corn Using Commercially-Available Herbicides," Tenn. Farm Home Sci. Prog. Rep. 93:38-40 (1975).

<131>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Broadleaf weeds; Grasses; Bean, pinto (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 2.5 and 3.0 lb/A
APPLICATION METHODS: Preplant spray (incorporated, 3.5 in. depth) and preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--Tripp sandy loam and Bridgeport loam; two locations in Nebraska
EFFECTS: Effective control of weeds with slight initial injury to field beans but no adverse effect on bean yield; preplant application more effective than preemergence
COMMENTS: Weed control and field bean yields higher when EPTC, trifluralin, and alachlor incorporated than when applied 4 days after planting and rotary hoed; best results with alachlor resulted when applied preemergence; best control of black nightshade was with EPTC and alachlor or these herbicides in combinations with other herbicides
REFERENCE: Fenster, C.R. and G.A. Wicks, "Weed Control in Field Beans in Nebraska," Proc. N. Centr. Weed Contr. Conf. 26:50-52 (1971).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Corn (ZEA MAYS); Plants
EXPERIMENTAL DOSE: 1.5, 2.0, and 4.0 lb/A
APPLICATION METHODS: Spray; 40 gal/A at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sarpy fine sandy loam; time period--1970 and 1971
EFFECTS: Moderate to effective control of weeds with slight initial injury to sweet corn but no consistent reduction of corn yield
COMMENTS: No herbicide used significantly increased yield; cleanly cultivated plots yielded significantly more than plots treated with basamaize, propachlor, or bladex
REFERENCE: Greig, J.K. and M. Asif, "Effects of Herbicides on Yield, Weed Control, and Nutrient Content of Sweet Corn", Proc. N. Centr. Weed Contr. Conf. 26:99-101 (1971).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Peanut (ARACHIS HYPOGAEA); Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 2.24, 3.36 and 4.48 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays in volume of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: Preemergence--2.24 kg/ha gave 50 and 70% control 24 days after planting in two respective trials and no control after 54 days and 20% control after 72 days in the same two respective trials, 3.36 kg/ha gave 50 and 20% control 24 and 52 days after planting, respectively, in another trial 3.36 kg/ha gave 85% control 24 days after planting and 20% control 72 days after planting, 4.48 kg/ha gave 60 and 30% weed control 24 and 52 days after planting, respectively; postemergence--2.24 kg/ha applied at 7 and 14 days after planting gave 70 and 30% control after 24 days and 40 and 20% control after 52 days, respectively; minor crop injury reported in some trials, none in others
COMMENTS: Crop injury was temporary; cultivation plus alachlor treatments, more effective than alachlor used alone
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Corn (ZEA MAYS); Cucumber (CUCUMIS SATIVUS); Bean, bush (PHASEOLUS HUMILIS); Tomato (LYCOPERSICON ESCULENTUM); Watermelon (CITRULLUS VULGARIS)
EXPERIMENTAL DOSE: 4 and 8 lb/A
APPLICATION METHODS: Fall and spring applications for nutsedge control--incorporated; preplanting incorporated application in crop experiments
EXPERIMENTAL CONDITIONS: Spring and fall treatments--5 to 6 inches incorporation, 4 x 20 ft plots with 3 replications, nutsedge counts made monthly, field studies; crop experiments--preplanting incorporated

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<134> CONT.
treatments, pot studies, vigor and growth injury determined 12 days after seeding and 17 days after emergence
EFFECTS: Fall--superior nutsedge control 1 and 2 months after application; spring--nutsedge control not as good as in fall; crop experiments--no significant effect on vigor and growth of corn and beans, vigor and growth of cucumber and watermelon reduced at 4 and 8 lb/A, tomato vigor and growth reduced at 8 lb/A; no significant effect on germination of any crop
REFERENCE: Locascio, S.J. and W.L. Currey, "Yellow Nutsedge (CYPERUS ESCULENTUS) control and Vegetable Crop Tolerance with Various Herbicides," Proc. South. Weed Sci. Soc. 26:259-266 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 1.7, 2.2 and 3.4 kg/ha
APPLICATION METHODS: Preemergence treatments; April and September applications
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Fall treatment--2.2 and 3.4 kg/ha eliminated clover and seriously injured alfalfa and crownvetch; spring treatment--1.7 and 3.4 kg/ha, alfalfa and crownvetch seriously injured; effective broadleaf weed control
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Squash, summer (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence; postemergence application of BAS-3512 H only
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7; time period--1972
EFFECTS: Effective control of all weeds in at least one experiment excepting crabgrass (slight to moderate control) with no adverse effect on cucumber and slight damage to squash
COMMENTS: Effective control of large crabgrass, redroot pigweed, common ragweed and lambsquarters in seeded cucumbers and summer squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence and preemergence applications of chloramben methyl ester alone
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Spinach (SPINACIA OLERACEA); Grasses; Purslane, common (PORTULACA OLERACEA); Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence applications
EXPERIMENTAL CONDITIONS: Field study; soil--Norfolk loamy sand; irrigation
EFFECTS: Effective control of all weeds except purslane (moderate control) and no adverse effect on lima beans
COMMENTS: Acceptable weed control and yields obtained with trifluralin and profluralin; dinitramine significantly reduced stand, vigor, and yields of baby lima beans; alachlor provided acceptable weed control without yield reduction; combined herbicide applications just as effective
REFERENCE: Beste, C.E., "New Herbicides for Lima Beans," Proc. Northeast. Weed Sci. Soc. 29:194-196 (1975).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 2.5 lb/A
APPLICATION METHODS: Preemergence applications principally, but some postemergence applications (alachlor, cyprazine, and cyanazine); 60 gal/A; 40 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1970 to 1972
EFFECTS: Effective control of all grasses in preemergence applications; moderate control only with postemergence applications
COMMENTS: Preemergence herbicides which controlled large crabgrass also controlled fall panicum; these included: alachlor, linuron, cyanazine and prynachlor; herbicides which did not control large crabgrass and fall panicum included atrazine, cyprazine and dicamba
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Grasses; Broadleaf weeds; Purslane, common (PORTULACA OLERACEA); Crabgrass (DIGITARIA sp.); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Groundsel, common (SENECIO VULGARIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Azalea (RHODENDRON OBTUSUM); Andromeda (PIERIS JAPONICA); Maple, amur (ACER GINNALA); Maple, Japanese (ACER PALMATUM); Juniper (JUNIPERUS CHINENSIS); Holly (ILEX CRENATA); Privet, California (LIGUSTRUM OVALIFOLIUM); Firethorn (PYRACANTHA COCCINEA); Yew (TAXUS INTERMEDIA); Hemlock, Canadian (TSUGA CANADENSIS); Pine, Japanese black (PINUS THUNBERGII); Honeysuckle, gold flame (LONICERA HECKROTTI); Dogwood, flowering (CORNUS FLORIDA); Goldenbells (FORSYTHIA INTERMEDIA); Hydrangea (HYDRANGEA PANICULATA)
EXPERIMENTAL DOSE: 5.0, 6.0, 7.0, and 8.0 lb/A; 4 and 15% G
APPLICATION METHODS: Postemergence spray, TeeJet nozzle; shaker broadcast for granular
EXPERIMENTAL CONDITIONS: Field study; nursery liners
EFFECTS: Effective control generally of grasses and moderate control of broadleafs with varied damage to ornamentals
COMMENTS: Alachlor and alachlor plus simazine combinations gave nearly complete weed control without injury to test plants; combinations of other herbicides with simazine also effective; Velsicol 5052 very effective against all plants, including nursery plants
REFERENCE: Bing, A., "1976 Preemergence Weed Control in Nursery Liners," Proc. Northeast Weed Sci. Soc. 31:320-325 (1977).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Plants; Potato (SOLANUM TUBEROSUM); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 2.5 lb/A; 4% EC
APPLICATION METHODS: Postemergence, preemergence, and preplant incorporated sprays; 38 gal/A; 20 psi; granular materials applied with cone-type applicator; varied combined treatments evaluated
EXPERIMENTAL CONDITIONS: Field study; three locations; rye cover crop after harvest
EFFECTS: Moderate weed control with no adverse effect on potato or rye
COMMENTS: Most treatments did not result in commercially acceptable control levels because of a number of conditions which reduced effectiveness of weed control in 1972
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A; EC
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 40 gal/A; 730616 TeeJet spray tip at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Moderate control of broadleafs and effective control of grass weeds with no adverse effect on potatoes
COMMENTS: Preplant incorporated herbicides R-7465, EPTC, and vernolate good single herbicides; increases in herbicidal effectiveness obtained when EPTC and vernolate combined with R-7465; alachlor alone excellent herbicide applied preemergence; increased weed control effectiveness resulted when this herbicide combined with linuron, chlorbromuron, metobromuron, methazole, or dinoseb
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Broadleaf weeds; Grasses; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A; EC
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Sassafras loam
EFFECTS: Effective control of grasses and moderate control of broadleafs with no adverse effect on corn
COMMENTS: Effective combinations were alachlor + atrazine, prynachlor + atrazine, chlorbromuron + atrazine, and chlorbromuron + simazine; atrazine slightly more effective than simazine
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Soybean (GLYCINE MAX); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 2.0 and 2.5 lb/A; EC
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold loam; soybeans planted with no tillage in wheat stubble; evaluation time--1 mo; soybeans planted one day before herbicide applications
EFFECTS: Slight to moderate control of weeds with slight reduction in vigor of soybeans
COMMENTS: Only paraquat and glyphosate applied alone gave good weed control; Paraquat and metribuzin reduced soybean stands but not seriously; alachlor and penoxalin did not control panicum; penoxalin or linuron in combination with glyphosate or paraquat improved control of many weed species over penoxalin and linuron applied alone; combinations of the two with either of the contact herbicides (3-way combinations) did not improve degree of control effected by single herbicides applied with paraquat or glyphosate; combinations

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<143> CONT.
of BH-2915 and alachlor did not improve weed control over either herbicide applied alone; considerable improvement resulted when glyphosate or paraquat added to the combination
REFERENCE: Michieka, R.W., R.D. Ilnicki, and J.R. Justin, "Weed Control in Double-Crop Soybeans with Herbicides Applied Alone and in Combination with Paraquat or Glyphosate," Proc. Northeast. Weed Sci. Soc. 31:61-69 (1977).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Potato (SOLANUM TUBEROSUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 2.5 lb/A
APPLICATION METHODS: Formulation - 4% EC; spray applied with tractor mounted sprayer, 20 psi pressure and volume of 38 gal/A; preemergence treatment
EXPERIMENTAL CONDITIONS: April planting; plots--2 rows wide by 30 ft long; randomized complete block design; treatments replicated five times in experiments 1 and 3 and four times in others; total of 5 experiments; rye seeded following potato harvest
EFFECTS: Commercially unacceptable weed control; no reported injury to potatoes; no effect on rye cover crop
COMMENTS: Author notes that growing conditions (cool spring and high June rainfall) caused vigorous weed growth and retarded potato growth, thus reason for commercially unacceptable weed control; herbicide combinations also discussed
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Grasses
EXPERIMENTAL DOSE: 2.5 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Effective control of annual grasses and moderate control of remaining weeds with no adverse effect on potato yield
COMMENTS: Metolachlor applied preemergence and penoxalin applied layby did not provide satisfactory control of broadleaved weeds; none of the drag-off treatments with dinitramine, USB-3153, or trifluralin controlled broadleaved weeds; USB-3153 and trifluralin applied at drag-off did not give satisfactory control of quackgrass
REFERENCE: Murphy, H.J. and T. Gajewski, "Effect of Several Herbicides Applied Preemergence, at Drag-Off and Layby on Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 31:176-179 (1977).

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CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Galinsoga (GALINSOGA CILIATA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Lamb's-quarters (CHENOPODIUM ALBUM); Chickweed, common (STELLARIA MEDIA); Chickweed, mouse-ear (CERASTIUM VULGATUM); Primrose, cut-leaf evening (OENOTHERA LACINIATA); Spurrey, corn (SPERGULA ARVENSIS); Goosegrass (ELEUSINE INDICA); Swinecress (CORONOPUS DIDYMUS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Grasses; Broadleaf weeds; Nutsedge, purple (CYPERUS ROTUNDUS); Cabbage (BRASSICA OLERACEA); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.0 to 6.0 lb/A
APPLICATION METHODS: Postemergence spray (translanted cabbage); preplant incorporated spray (seeded cabbage); preemergence (snapbeans); sprays at 18 gal/A and 20 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Wickham fine sandy loam and Portsmouth fine sandy loam; time period--1969 to 1972
EFFECTS: At 3.0 lb/A, moderate to effective control of all weeds with no adverse effect on cabbage yield (except in direct-seeded study) and slightly reduced snap bean yield
COMMENTS: Alachlor has potential for use on transplanted cabbage particularly in situations where annual broadleaved weeds present major problem; 3 lb/A optimum for most soil conditions and crop response; postemergence application of alachlor to direct-seeded cabbage injurious, much more so than when applied to transplanted cabbage; use of alachlor on cabbage will probably need to be restricted solely to transplanted crops; on snapbeans, alachlor had a narrow margin of crop safety
REFERENCE: Monaco, T.J. and J.B. Weber, "Alachlor-A Herbicide for Selected Vegetable Crops," Proc. S. Weed Sci. Soc. 26:205-214 (1973).

<147>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Lasso
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Nightshade, black (SOLANUM NIGRUM); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed (AMARANTHUS sp.); Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Soil incorporation (preplant) with disks or cultivators to depth of 1.5-3.0 in.
EXPERIMENTAL CONDITIONS: Field study; all major soil types in CA, CO, ID, MT, WA and WY
EFFECTS: Effective control of broadleaf weeds and grasses with no toxicity to dry beans
COMMENTS: COBEX showed definite potential as selective herbicide for dry and green beans when compared with several conventional herbicides
REFERENCE: Harris, G.K. and J.D. Stone, "COBEX - A New Herbicide for Beans," Proc. West. Soc. Weed Sci. 27:47 (1974).

<148>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Panicum, fall (PANICUM DICHOTOMIFLORUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 1.5, 2.0, and 2.5 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold sandy loam; evaluation time--approx. 2 mos; corn harvested at maturity for yield data
EFFECTS: At 2.0 and 2.5 lb/A, effective control of weeds except lambsquarters and morningglory; no injury to corn even at highest rate
COMMENTS: Seneca Chief most susceptible variety to yield reductions particularly from poorer herbicide treatments; all varieties showed injury from metribuzin; the best herbicide treatment was alachlor + MC 4379 80W
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "The Response of Several Sweet Corn Varieties to Various Herbicides and Herbicide Combinations," Proc. Northeast. Weed Sci. Soc. 28:175-181 (1974).

<149>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS); Ladysthumb (POLYGONUM PERSICARIA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 2.2 and 3.4 kg/ha
APPLICATION METHODS: Preemergence application
EXPERIMENTAL CONDITIONS: Field study; soil--Plano silt loam; visual estimates of weeds; evaluation time--about 2 mos. (at harvest)
EFFECTS: Moderate control of broadleaf weeds; effective control of grasses; no effect on pea yield
COMMENTS: Of six herbicides evaluated, propachlor and a combination of dalapon and MCPB provided most effective control of annual weeds with least risk of pea crop injury
REFERENCE: Harvey, R.G., E.T. Gritton, and R.E. Doersch, "Effects of Selected Herbicides on Annual Weed Control and Production of Processing Peas," Agron. J. 64(1):812-815 (1972).

<150>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Velvetleaf (ABUTILON THEOPHRASTI); Potato (SOLANUM TUBEROSUM); Foxtail (SETARIA sp.)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Preemergence spray; 363 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras sandy loam; evaluation times--2 and 3 mos
EFFECTS: Moderate control of broadleaf weeds; effective control of foxtails; no effect on potato yield
COMMENTS: Chlorbromuron and metribuzin controlled weeds comparably to standard linuron; alachlor alone not effective but very effective used in combination with chlorbromuron, metribuzin, and linuron; postemergence application of metribuzin very phytotoxic to potatoes and weeds
REFERENCE: Henne, R.C. and R.T. Guest, "Alachlor, Chlorbromuron, and Metribuzin for Weed Control in Potatoes," Proc. Northeast. Weed Sci. Soc. 28:296-298 (1974).

<151>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.5, 5.0, and 10.0 kg/ha
APPLICATION METHODS: Soil application; herbicide placed in seed planting zone, in shoot exposure zone, and in root exposure zone
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--32 C (day) and 24 C (night); photoperiod--14 hr; soil--Plano silt loam; glass tube culture; exposure zones delimited by sand and activated charcoal barriers; seed planted at 2.5 and 8.0 cm depths
EFFECTS: Growth inhibition occurred with shoot zone exposures but not with root zone exposure; shallower planting depth (2.5 cm) resulted in greater inhibition than 8.0 cm planting depth; similar results obtained for all application rates with severity of inhibition being dependent on rate applied
COMMENTS: Other phytotoxic effects were no emergence, abnormal emergence, and primary leaf distortion; roots obviously less sensitive to alachlor than shoots
REFERENCE: Devisetty, B.N. and R.G. Harvey, "Alachlor Placement in the Soil as Related to Phytotoxicity to Maize (ZEA MAYS L.) Seedling," Weed Res. 17(3):163-168 (1977).

<152>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Lasso
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.00, 6.00, and 12.00 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; application one day after sowing; time period -- 1969 to 1971
EFFECTS: Effective weed control initially but heavy weed regrowth with no adverse effect on corn yield
COMMENTS: Atrazine, and lasso found on par with hand weeding as far as grain yields concerned; atrazine found to control broad spectrum of weeds compared to other herbicides; tafazine 50W effective in controlling weeds but grain yields depressed
REFERENCE: Singh, D.J.C., V.L. Hall, and K.N. Rao, "Weed Control in Maize by Herbicides," The Andhra Agric. J. 18(3):91-94 (1971).

<153>
<153>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Millet, Japanese (ECHINOCHLOA CRUSGALLI); Sorghum, grain (SORGHUM BICOLOR); Nutsedge, yellow (CYPERUS ESCULENTUS); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Preplant spray; 37 dkl./ha; soil incorporated (10 cm depth)
EXPERIMENTAL CONDITIONS: Field study; soil--Hespera sandy loam and Hespera loamy sand; evaluation time--2 and 5 wk and harvest; sorghum and millet used as bioassay plants in persistence evaluation
EFFECTS: Moderate control of nutgrass with slight to moderate effects on crop plants
COMMENTS: All herbicides controlled nutsedge for at least 1 month in two or more experiments; cotton most tolerant to applications of CP-53619, of prometryne, of San-6706, and of methazole; higher rates of San-6706, and methazole and all rates of alachlor, R-7465, and R-12001 reduced yield of cotton in one or more experiments
REFERENCE: Keeley, P.E., J.H. Miller, and C.H. Carter, "Weed and Cotton Response to Several Herbicides," Weed Sci. 21(4):327-329 (1973).

<154>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Peanut (ARACHIS HYPOGAEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Junglerice (ECHINOCHLOA COLONUM); Bermudagrass (CYNODON DACTYLON); Nightshade (SOLANUM VILLOSUM)
EXPERIMENTAL DOSE: 1.92 kg/ha
APPLICATION METHODS: Postemergence spray; aqueous carrier-500 l./ha; 60 sq m plots
EXPERIMENTAL CONDITIONS: Field study; sprinkle irrigation 24 hr after herbicide application and every 2 wk thereafter; sandy loess soil; temperature--20 to 25 C; RH--51 to 68%; weekly hand weeding of controls; phosphorus addition--500 to 600 kg/ha; monthly cultivation when employed
EFFECTS: Effective weed control with application of herbicides singly, in combination, or in conjunction with monthly cultivation; no or minimal effect on peanut yield
COMMENTS: Evaluation of eleven herbicides or herbicide combinations; hand weeding most effective; benefin alone and benefin/terbutryn, alachlor/ terbutryn, diphenamid/terbutryn, and benefin/alachlor combinations as effective as hand weeding with no adverse effect on peanut yield
REFERENCE: Amir, J. and N. Lifshitz, "Weed Control of Irrigated Peanuts in an Arid Zone," J. Agric. Sci. Camb. 86:623-626 (1976).

<155>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Pea, sweet (PISUM SATIVUM); Amaranth (AMARANTHUS VIRIDIS); (DIGERA ARVENSIS); (BOERHAAVIA DIFFUSA); (BOERHAAVIA REPANDA); Dayflower (COMMELINA BENGHALENSIS); (PENNISETUM TYPHOIDES); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0, 10.0, and 100 ppm
APPLICATION METHODS: Postemergence spray to runoff
EXPERIMENTAL CONDITIONS: greenhouse study (presumed); pot culture
EFFECTS: Slight to moderate damage to all plants except C. ROTUNDUS
COMMENTS: Triazine and urea herbicides caused appreciable stimulation of stomatal opening within two hours; amides caused rapid closure of open stomata; thiocarbamates caused differential response
REFERENCE: Rama Das, V.S. and M. Santakumari, "Stomatal Behaviour Towards Four Classes of Herbicides as a Basis of Selectivity to Certain Weeds and Crop Plants," Proc. Indian Acad. Sci. 82B(3):108-116 (1975).

<156>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Cudweed, low (GNAPHALIUM ULIGONOSA); Broccoli (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Cabbage (BRASSICA OLERACEA); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 1.7 and 3.4 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; 5 year period
EFFECTS: Effective control of weeds at 3.4 kg/ha for one year only with no adverse effects on vegetables at either rate
COMMENTS: Trifluralin, DCPA, and nitrofen gave eratic weed control and must be applied at highest rates of application permitted by label for even average weed control in most years; two new herbicides pryanchlor and DMC 3950 show promise for use on cole crops in Eastern Canada
REFERENCE: Ivany, J.A. and J.A. Cutcliffe, "Herbicides for Cole Crops in Eastern Canada," Proc. Northeast. Weed Sci. Soc. 27:194-198 (1973).

<157>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS); Cupgrass, hairy (SETARIA FABERI); Foxtail, robust purple (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.56, 1.12, and 2.24 kg/ha
APPLICATION METHODS: Soil addition; preplant spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; soil--Plano silt loam; temperature--26 C
EFFECTS: Calculated 50% effective dose was 0.28-0.47 kg/ha with high correlation between herbicidal effect (dry wt loss) and seed weight

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COMMENTS: All four herbicides provided acceptable control for barnyardgrass, giant foxtail, green foxtail, robust-purple foxtail, and yellow foxtail; susceptibility of grasses to cyanazine and alachlor correlated with seed size; alachlor more effective in controlling green foxtail and hairy cupgrass when applied to the soil surface before emergence than when incorporated into soil prior to sowing
REFERENCE: Harvey, R.G., "Susceptibility of Seven Annual Grasses to Herbicides," Weed Res. 14(1):51-55 (1974).

<158>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Cotton (GOSSYPIUM HIRSUTUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.12, 2.24, and 4.48 kg/ha
APPLICATION METHODS: Soil surface spray (preplant) with incorporation; 56 dkl/ha; depth--6.35 cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Hesperia fine sandy loam; temperature--27 to 31 C; nutsedge tubers and cotton seed planted; plastic container culture; evaluation time--up to 8 wk
EFFECTS: Effective control of nutsedges at two highest rates but significant reduction of growth and of root length in cotton
COMMENTS: All treatments except lowest rate of alachlor and VCS-438 controlled yellow nutsedge for 8 weeks; these and other compounds less effective against purple nutsedge; all herbicides moderately to severely damaged cotton except CP-53619 and P-7465
REFERENCE: Keeley, P.E., C.H. Carter, and J.H. Miller, "Evaluation of the Relative Toxicity of Herbicides to Cotton and Nutsedge," Weed Sci. 20(1):71-74 (1972).

<159>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Grasses; Broadleaf weeds; Lupine, narrow-leaf (LUPINUS ANGUSTIFOLIUS)
EXPERIMENTAL DOSE: 1.1 and 2.2 kg/ha; 50% EC
APPLICATION METHODS: Preemergence spray; surface applied immediately after seeding; 100-200 l. /ha
EXPERIMENTAL CONDITIONS: Field study; soils--7 types; 18 locations in western Australia; time period--1972 to 1974
EFFECTS: No adverse effect on lupin with effective control of annual grass weeds and slight to moderate control of broadleaf weeds (2.2 kg/ha)
COMMENTS: Significant yield increases obtained on at least one occasion with alachlor, diuron, linuron, simazine, and trifluralin; diuron, linuron, and simazine each resulted in significant lupin yield reduction on one occasion
REFERENCE: Allen, J.M., "2. The Response of Narrow-Leafed Lupins to Preemergence Herbicides," Aust. J. Exp. Agric. Anim. Husb. 17(84):118-125 (1977).

<160>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Soybean (GLYCINE MAX); Jimsomweed (DATURA STRAMONIUM); Velvetleaf (ABUTILON THEOPHRASTI)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Preplant incorporated and "at cracking" treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies; Mattapex silt loam; 10 by 20 ft plots, 4 rows of soybeans, 4 replications; spring planting
EFFECTS: At cracking--minor soybean injury (vigor reduction, necrosis), satisfactory weed control; preplant incorporated--no soybean injury, poor jimsonweed control
COMMENTS: Combinations of herbicides also tested
REFERENCE: Parochetti, J.V., "Control of Jimsonweed and Three Broadleaved Weeds in Soybeans with Herbicides," Proc. Northeast. Weed Sci. 29:19-25 (1975).

<161>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Preemergence treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: Minor soybean injury (vigor reduction); excellent weed control
COMMENTS: Herbicide combinations also tested
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<162>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Sesame (SESAMUM INDICUM); Pigweed (AMARANTHUS sp.); Barley (HORDEUM VULGARE); Millet, Japanese (ECHINOCHLOA FRUMENTACEA)
EXPERIMENTAL DOSE: 1.5, 2.0, and 4.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley, mustard, and Japanese millet planted as weed crop
EFFECTS: No injury to sesame and moderate barley control at 1.5 lb/A; 2 lb/A gave good control of pigweed and millet and little injury to sesame; 4 lb/A gave good control of pigweed, millet, and barley but moderately injured sesame (stand reduction)
COMMENTS: Nominal mustard stand even in untreated plots
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

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<163>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Grasses; Broadleaf weeds; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 10 locations in Iowa
EFFECTS: Effective control of grasses and moderate control of broadleaf weeds with no adverse effect on soybean
COMMENTS: Preplant incorporated herbicides trifluralin, dinitramine, profluralin, alachlor, and vernolate effectively reduced grassy weed populations; tank mix addition of metribuzin and bifenox broadened the spectrum of weeds controlled; overlay treatments of metribuzin were also equally effective in broadening the spectrum of weed control; preemergence treatments provided excellent examples of grass and broadleaf weed control in soybeans
REFERENCE: Jennings, V.M., "Soybean Herbicide Evaluations Across Iowa in 1974," Proc. North Cent. Weed Control Conf. 29:79-83 (1974).

<164>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Plants; Croton, gold dust (CODIAEUM VARIEGATUM)
EXPERIMENTAL DOSE: 1, 2, 4, and 8X recommended rate (4 lb/A); EC
APPLICATION METHODS: Herbicide-impregnated mulches (0.75 in. over soil surface)
EXPERIMENTAL CONDITIONS: Field study; pot culture; lath shade; overhead sprinkle irrigation; evaluation time--up to 28 wk
EFFECTS: At 2X rate, effective weed control with no adverse effect on CODIAEUM after 28 wk
COMMENTS: No crop phytotoxicity observed from any treatment; weed control initially good with each herbicide except dacthal when soil incorporated; after 8 weeks, weeds noted in 1 and 2x rates of both simazine and treflan soil incorporation treatments; after 28 weeks excessive weed growth found in every soil-incorporation treatment except lasso and treflan
REFERENCE: Weel, P.L., "Weed Control in Containers With Herbicide-Impregnated Mulch Materials," Proc. Fla. State Hort. Soc. 85:409-413 (1973).

<165>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Corn (ZEA MAYS); Foxtail, giant (SETARIA FABERI); Velvetleaf (ABUTILON THEOPHRASTI)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Preemergence and pre-plant incorporated; types of applications not specifically stated for varied studies
EXPERIMENTAL CONDITIONS: Field studies
EFFECTS: Effective control of foxtail, slight control of velvetleaf, and no adverse effect on corn
COMMENTS: As preplant incorporated application, excellent weed control obtained in cotton, soybeans, peanuts and other crops; AC-92,553 also applied pre-emergence; with this method, controlled most grasses and certain broadleaved weeds in maize, wheat, and rice
REFERENCE: Sprankle, P.L., "AC-92,553, Selective Herbicide for Weed Control in Cereals and Other Crops," Proc. 12th British Weed Cont. Conf. 2:825-830 (1974).

<166>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Corn (ZEA MAYS); Nutsedge, purple (CYPERUS ROTUNDUS); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); (PANICUM ZIZANOIDES); Morningglory (IPOMOEA sp.); Bermudagrass, common (CYNODON DACTYLON); (KALLSTROEMIA MAXIMA); (SORGHUM VERTICILLIFLORUM)
EXPERIMENTAL DOSE: 3 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Clay loam soil; field tests
EFFECTS: 68% maize yield compared to clean-weeded control; moderate weed control
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<167>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Corn (ZEA MAYS); Nutsedge, yellow (CYPERUS ESCULENTUS); Foxtail, giant (SETARIA FABERI); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 2.5 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Mattapex silt loam; time period--1974 and 1975
EFFECTS: Moderate to effective weed control with slight initial damage of corn but no adverse effect on yield
COMMENTS: Best control of weed species achieved with combination of materials; only RP-20630 and RP-15018, at high rates, caused corn injury and reduced yields
REFERENCE: Parochetti, J.V., G.W. Burt, and A.W. Bell, "Triazines, Acetanilides, and Several Other Herbicides for Weed Control in Corn," Proc. N.E. Weed Sci. Soc. 30:48-54 (1976).

<168>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Broadleaf weeds; Grasses; Onion (ALLIUM CEPA); Leek (ALLIUM PORRUM); Cauliflower (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Rape (BRASSICA CAMPESTRIS); Turnip (BRASSICA RAPA); Rutabaga (BRASSICA NAPOBRASSICA)
EXPERIMENTAL DOSE: 1.5 to 3.0 lb/a; 48% EC and 10% G
APPLICATION METHODS: Preemergence spray and granule broadcast
EXPERIMENTAL CONDITIONS: Field study; time period--1969 to 1972; 22 locations
EFFECTS: Moderate to effective control of weeds with severe damage to onions and leeks and lesser damage to other crops; granular application effective as spray
COMMENTS: Alachlor and propachlor performed differently in trials from 1969 to 1972; propachlor proved safer chemical on crops in both a WP and granular formulations; alachlor more damaging, but most of damage to brassicas only transient
REFERENCE: Hodgkinson, H.D., "Weed Control in Fodder Brassicas and Vegetables Using Granular Alachlor and Propachlor," Proc. 11th Weed Cont. Conf. 11:150-157 (1972).

<169>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Grasses; Velvetleaf (ABUTILON THEOPHRASTI); Foxtail, giant (SETARIA FABERI); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence application; 10 to 30 gal/A at 20 to 30 psi
EXPERIMENTAL CONDITIONS: Field study; locations in 6 states (MI, MO, NE, IL, IA, and OH)
EFFECTS: No effect on velvetleaf and moderate to effective control of other weeds with soybean yield reduction
COMMENTS: CGA-10832 gave good control of prevalent weed species throughout growing season; CGA-11607 and CGA-14397 gave inferior weed control compared to CGA-10832; weed control from trifluralin comparable at equivalent rates to CGA-10832, with no significant differences indicated
REFERENCE: LeBaron, H.M., R.R. Wilson, and T.D. Taylor, "Evaluation of CGA-10832 and Other Herbicides for Soybeans in the North Central States," Proc. N. Cent. Weed Contr. Conf. 26:44-48 (1971).

<170>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Potato (SOLANUM TUBEROSUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 3.0 and 4.0 lb/A
APPLICATION METHODS: Preemergence, pre-plant incorporated, or postemergence sprays; 30 to 35 lb/sq in at 18 to 43 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Haven loam
EFFECTS: Preplant, 4.0 lb/A--moderate control of nutsedge and effective control of barnyardgrass with slight damage to potato
COMMENTS: Outstanding treatments were CGA 24705 applied preemergence or pre-soil incorporated, maintaining 80% control or better for at least three months; results excellent also with EPTC, alachlor, napropamide, and FMC 25213; several herbicides in combination also effective
REFERENCE: Selleck, G.W. and L.R. Weber, "Herbicide Trials for Yellow Nutsedge in Potatoes on Long Island," Proc. NE Weed Sci. Soc. 30:239-242 (1976).

<171>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Crabgrass, hairy (DIGITARIA SANGUINALIS); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: Preemergence; postemergence, and preplant incorporated sprays; 18 gal/A at 30 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam
EFFECTS: Preplant incorporated--effective weed control with slight, early damage of cabbage
COMMENTS: None of the herbicides used unacceptably phytotoxic, but alachlor resulted in slight temporary stunting; alachlor most effective herbicide on total weed spectrum and HOE 22408 most effective for control of annual grasses
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicide Trial for Direct Seeded Fall Cabbage on Long Island," Proc. NE Weed Sci. Soc. 30:197-199 (1976).

<172>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Freehold sandy loam
EFFECTS: At 3.0 lb/A, effective control of grass weed and moderate control of broadleafs with no effect on corn yield
COMMENTS: Combinations of alachlor and atrazine, alachlor and simazine, and alachlor and cyanazine resulted in better control of fall panicum than single treatments of atrazine, simazine, or cyanazine; best overall control obtained with alachlor
REFERENCE: Herman, D.J. and R.D. Ilnicki, "Weed Control in Corn by Alachlor and Prynachlor in Combination with Some S-Triazine Herbicides," Proc. Northeast. Weed Sci. Soc. 27:41-46 (1973).

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<173>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 1.8 kg/ha
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Effective control of weeds and moderate reduction in vigor of peanuts
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit futher testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<174>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.24, 3.36, and 4.48 kg/ha; 4% EC
APPLICATION METHODS: Preplant incorporated and preemergence sprays; incorporation by discing within 6 hr
EXPERIMENTAL CONDITIONS: Field study; soils--silt loam and loam
EFFECTS: Slight to moderate control of nutsedge with little or no damage on corn and soybean; preplant application generally more effective than preemergence application
COMMENTS: Corn and soybean tolerance to CGA-24705 excellent in all cases at rates providing acceptable control of yellow nutsedge; CGA-24705 more active than alachlor, regardless of method of application; although more effective against yellow nutsedge when applied preplant incorporated, CGA-24705 gave acceptable control following preemergence treatments
REFERENCE: Higgins, E.B., M.G. Schnappinger, and S.W. Pruss, "Yellow Nutsedge Control with CGA-24705 in Corn and Soybeans, "Proc. Northeast. Weed Sci. Soc. 29:9-16 (1975).

<175>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 1.5, 2.0, and 2.5 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Effective control of all weeds except ragweed (no control) and lambsquarters (moderate control) with no adverse effect on corn
COMMENTS: VEL 5052 not effective on lambsquarters or common ragweed; buthiazole (VEL 5026) very effective on fall panicum; combinations of VEL 5052 with buthiazole or atrazine effected excellent control of many annual weeds; combinations of buthiazole with alachlor produced excellent control of many weeds
REFERENCE: Ilnicki, R.D. and R.W. Michieka, "Weed Control in Corn with VEL 5052 and Buthiazole (VEL 5026) Applied Alone, and in Combination with Atrazine and Alachlor," Proc. Northeast. Weed Sci. Soc. 31:15-19 (1977).

<176>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-
CHEMICAL COMMON NAME: Alachlor
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Goosegrass (ELEUSINE INDICA); Crabgrass, large (DIGITARIA SANGUINALIS); PANICUM (PANICUM LAEVIFOLIUM); Dayflower (COMMELINA BENGHALENSIS); Pigweed (AMARANTHUS sp.); Marigold (TAGETES MINUTA); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 1.0, 2.0, and 3.0 kg/ha
APPLICATION METHODS: Preemergence spray; 250 l./ha; combined applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective control of DIGITARIA, PANICUM, and PORTULACA at 3.0 kg/ha with slight control of remaining weeds
COMMENTS: Formulation gave wide spectrum selective weed control in maize with residual action of up to 12 weeks on most weeds; shallow cultivation up to 6 weeks after application did not materially affect residual action
REFERENCE: Jooste, J.W. and J.J. Van Biljon, "Metolachlor + Atrazine a Combination Pre-Emergence Herbicide for Broad Spectrum Weed Control in Maize," Crop Protect. 5:85-90 (1976).

<177>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-dimethylphenyl)-N-[(2-methylpropoxy)methyl]-
CHEMICAL COMMON NAME: Delachlor
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 3.0 to 12.0 ppm
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; soil-prepared with varying clay, silt, sand, lime, and organic content; plastic cup culture
EFFECTS: Reduced growth (fresh weight) of shoots
COMMENTS: Cycloate was most potent herbicide of four, except in soils with high organic matter where delachlor was more active; benzthiazuron was least phytotoxic herbicide in the peat + sand mixtures, but more active than pyrazon in lighter soils of the Newe Ya'ar series; addition of sand to peat and soils increased phytotoxicity of all herbicides; addition of lime to Newe Ya'ar clay soil decreased phytotoxicity of benzthiazuron and pyrazon but not of delachlor
REFERENCE: Horowitz, M. and T. Blumenfeld, "Phytotoxicity in Different Synthetic Soils," Phytoparasitica 1(2):101-110 (1973).

<178>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-dimethylphenyl)-N-[(2-methylpropoxy)methyl]-
CHEMICAL COMMON NAME: Delachlor
PLANT: Beet, sugar (BETA VULGARIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, green (SETARIA VIRIDIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PENSYLVANICUM); Buckwheat, wild (POLYGONUM CONVOLVULUS); Mustard, wild (BRASSICA KABER); Stinkweed (THLASPI ARVENSE)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: 12 treatments per trial, each trial replicated 8 times; 4 row wide plots, 50 ft. long--row 1 was untreated check, row 2 had herbicide plus hand weeding, row 3 received preemergence TCA at 8 lb/A and row 4 was same as row 2 except delayed hand weeding; visual ratings
EFFECTS: Minor crop damage; poor foxtail control; moderate pigweed and lambsquarter control, lambsquarter control a little better than pigweed; good control of other species
REFERENCE: Klassen, M. and G. Guccione, "Evaluation of Herbicides for Weed Control in Sugarbeets in Manitoba," J. Amer. Soc. Sugar Beet. Technol. 16(7):553-560 (1971).

<179>
CHEMICAL NAME: Acetamide, 2-chloro-N-(2,6-dimethylphenyl)-N-[(2-methylpropoxy)methyl]-
CHEMICAL COMMON NAME: CP-52223
PLANT: Cauliflower (BRASSICA OLERACEA); Broccoli (BRASSICA OLERACEA); Speedwell (VERONICA sp.); Chickweed, common (STELLARIA MEDIA); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Preemergence spray at a volume of 40 gpa
EXPERIMENTAL CONDITIONS: Medium loam soil; split plot design with 3 replications; 10 X 2 yd plot size; at least 2 visual assessments of treatment effect
EFFECTS: Minor injury to crops, cabbage injured the least followed by cauliflower; excellent VERONICA sp. control and good S. MEDIA control
REFERENCE: Cassidy, J.C., "Herbicide Evaluation in Brassica Crops - 1968-72," Proc. Brit. Weed Control Conf. 11:958-964 (1972).

<180>
CHEMICAL NAME: Acetamide, 2-chloro-N-(4-chlorophenyl)-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal growth; pot test--no data; Petri dish test--114, 73, and 20% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<181>
CHEMICAL NAME: Acetamide, 2-chloro-N-methyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--no germination of wheat or cabbage; Petri dish test--91, 95, and 66% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<182>
CHEMICAL NAME: Acetamide, 2-chloro-N-methyl-N-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--abnormal wheat and cabbage growth, no ryegrass growth; pot test--no data; Petri dish test--73, 55, and 21% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

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<183>
CHEMICAL NAME: Acetamide, 2-chloro-N-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal ryegrass growth, abnormal cabbage and slightly abnormal wheat growth; pot test--no data; Petri dish test--114, 62, and 22% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<184>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: CDAA
PLANT: Pigweed (AMARANTHUS sp.); Popolo (SOLANUM NIGRUM); Floras paintbrush (EMILIA SONCHIFOLIA); Richardia (RICHARDIA SCABRA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3.0, 4.0, and 6.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 4% EC Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations ion Hawaii
EFFECTS: Moderate control of pigweed and richardia and no control of popolo and Floras paintbrush with good tolerance of corn
REFERENCE: Tanaka, J.S., R.R. Romanowski, F.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<185>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: CDAA
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Carpetweed (MOLLUGO VERTICILLATA); Ladysthumb (POLYGONUM PERSICARIA); Crabgrass, large (DIGITARIA SANGUINALIS); Chickweed, common (STELLARIA MEDIA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Shallot (ALLIUM ASCALONICUM)
EXPERIMENTAL DOSE: 4.0 and 6.0 lb/A
APPLICATION METHODS: Postemergence spray; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Plymouth sandy loam; supplemental irrigation
EFFECTS: At 6.0 lb/A, slight control of lambsquarters and ragweed, moderate control of carpetweed, and effective control of remaining weeds with no adverse effect on shallots
COMMENTS: All herbicides resulted in varying degrees of weed control but no unacceptable phytotoxicity to crop; alachlor and nitrofen provided good to excellent control of weeds; methazole appeared effective on broader spectrum of weeds than nitrofen
REFERENCE: Sanok, W.J., G.W. Selleck, and W.L. Kline, "Herbicides for Weed Control in Onions and Shallots," Proc. Northeast. Weed Sci. Soc. 31:261-265 (1977).

<186>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: CDAA
PLANT: Cabbage (BRASSICA OLERACEA); Purslane, common (PORTULACA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preemergence spray; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; supplemental irrigation; crops direct seeded
EFFECTS: Effective weed control with slight cabbage phytotoxicity
COMMENTS: Outstanding candidates for selectivity in seeded cabbage and control of barnyardgrass, purslane, and pineappleweed were H22234 and oryzalin; alachlor also gave excellent control but initial stunting of cabbage seedlings; by end of the season, phytotoxicity not visible with alachlor or any other treatment.
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicides for Weed Control in Sweet Corn and Cabbage," Proc. Northeast. Weed Sci. Soc. 31:256-260 (1977).

<187>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: Allidochlor
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--1 ppm showed 50% or greater inhibition in oat but less than 50% in sorghum and cucumber, 10 ppm caused greater than 50% in oat and cucumber but less than 50% in sorghum; shoot--1 ppm caused greater

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than 50% inhibition in oat but less than 50% in sorghum, 10 ppm showed greater than 50% in oat and sorghum
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<188>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: CDAA
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 6.0 and 12.0 lb/A
APPLICATION METHODS: Preplant non-incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: Moderate weed control with slight damage of soybeans and no damage of cotton or corn
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but fairly safe on corn; MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(isopropylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<189>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: CDAA
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.0 to 18.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: Effective weed control with no adverse effect on cotton at 9.0 lb/A for 60 day period
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<190>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: CDAA
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate weed control with no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<191>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: CDAA
PLANT: Pine, red (PINUS RESINOSA); Purslane, common (PORTULACA OLERACEA); Carpetweed (MOLLUGO VERTICILLATA); Weeds
EXPERIMENTAL DOSE: 4, 8, 16, and 32 lb/A
APPLICATION METHODS: Postemergence spray--one quart to each plot
EXPERIMENTAL CONDITIONS: Pine stock--spring 1960 germination (1-0 stock), spring 1959 germination (2-0 stock), and spring 1958 germination (2-1 stock); randomized complete block design, 4 by 2.7 ft plots; field studies; Plainfield sand soil
EFFECTS: 1-0 stock--weeds significantly controlled at 16 and 32 lb/A, significant reduction in seedling survival at 16 and 32 lb/A; 2-0 stock--no significant effect on seedling dry weight at 16 and 32 lb/A; 2-1 stock--significant weed reduction but no significant difference in seedling dry weight from control at 4 and 8 lb/A
COMMENTS: Weed infestation slight; weeds not tabulated separately
REFERENCE: Winget, C.H., T.T. Kozlowski, and J.E. Kuntz, "Effects of Herbicides on Red Pine Nursery Stock," Weeds 11(2):87-90 (1963).

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<192>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: CDAA
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Onion (ALLIUM CEPA); Tomato (LYCOPERSICON ESCULENTUM); Pepper (CAPSICUM FRUTESCENS); Cucumber (CUCUMIS SATIVUS); Bean, hyacinth (DOLICHOS LAB LAB); Broccoli (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 4.0, 6.0, and 8.0 lb/A; G
APPLICATION METHODS: Preplant incorporated (2 in. depth) by rotary cultivator
EXPERIMENTAL CONDITIONS: Field study; 3 CA locations; furrow irrigation; soils--Moreno fine sandy loam and Ramona sandy loam
EFFECTS: At 4.0 lb/A, moderate weed control with reduced crop emergence and vigor or kill of all crops except corn and onion (slight effects)
COMMENTS: Herbicides for vegetables in three desert areas managed under furrow irrigation exhibited extreme variability between locations in herbicide response and crop toxicity; no treatments provided reasonable compromise between weed control and crop injury at any one location; none met this requirement at each location
REFERENCE: Lyons, J.M. and F.L. Whiting, "Incorporated Preemergence Granular Herbicides on Vegetable Crops," Weeds 13(3):242-245 (1965).

<193>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: CDAA
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 4, 6, and 8 lb/A
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Weed control effectiveness not stated, but injury and yield reduction of tomato
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<194>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: CDAA
PLANT: Watergrass; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 to 8.0 qt/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) spray
EXPERIMENTAL CONDITIONS: Field study; two CA locations; soils--Burns silty clay loam and Egbert muck; time period--1960 and 1961
EFFECTS: At 8.0 qt rate, moderate watergrass control with slight damage of corn but no adverse effect on corn yield
COMMENTS: Chemicals incorporated in soil as preemergence treatments gave satisfactory control of watergrass and many broadleaved weeds in corn growing in organic soils of Sacramento-San Joaquin Delta; eptam, tillam, atrazine and Randox-T all potentially useful chemicals
REFERENCE: Foy, C.L., T. Lyons, and S.P. Carlson, "Controlling Watergrass in Corn," Calif. Agric. 16(3):12-14 (1962).

<195>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: CDAA
PLANT: Purslane, common (PORTULACA OLERACEA); Chickweed, mouse-ear (CERASTIUM VISCOSUM); Galinsoga (GALINSOGA CILIATA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Mustard, wild (BRASSICA KABER); Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Groundcrack spray at 35 psi and 43 gal/A followed by postemergence spray of oxadizon or nitrofen
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; 11 onion varieties studied in direct-seeding culture
EFFECTS: Moderate to effective weed control with slight damage to onion
COMMENTS: Best combination of weed control, selectivity, and yield response occurred with standard CDAA treatment at cracking plus 2 applications of nitrofen postemergence; oxadiazon and Bay NTN 6867 effective for at least 8 weeks in controlling weeds; oxadiazon phytotoxic to onions at ground crack stage but selectivity markedly improved with postemergence applications; yield data indicated that Bay NTN 6867 significantly reduced yield in all but one variety
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicide Trials for Direct Seeded Onions on Long Island, 1975," Proc. NE Weed Sci. Soc. 30:181-184 (1976).

<196>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: CDAA
PLANT: Soybean (GLYCINE MAX); Plants
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Preemergence spray; not less than 16 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period -- 1958 and 1959
EFFECTS: Moderate weed control with no adverse effect on soybean yield
COMMENTS: Mixture of CDAA and DNBP consistently gave better control of annual weeds in soybeans than either CIPC, NPA, CDAA or DNBP alone; green foxtail, barnyardgrass, lambsquarters, rough pigweed, purslane, ragweed, field pennycress and wild buckwheat controlled by this mixture; although some varieties of soybeans were more susceptible than others to a distortion of the plumular leaves caused by the CDAA, none permanently injured at rates used
REFERENCE: Hay, J.R., "Pre-Emergence Weed Control in Soybeans with Mixtures of Two Herbicides," Weeds 9(1):117-123 (1961).

<197>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: CDAA
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6)M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 3.79 to 3.91 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<198>
CHEMICAL NAME: Acetamide, 2-chloro-N,N-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal wheat and ryegrass growth, abnormal cabbage test; pot test--abnormal wheat growth, no cabage germination; Petri dish test--no data
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<199>
CHEMICAL NAME: Acetamide, 2-fluoro-
CHEMICAL COMMON NAME: Fluoracetamide
PLANT: Begonia (BEGONIA sp.); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Cineraria; Coleus (COLEUS BLUMEI); Cyclamen; Geranium; Polyanthus; St. Paulia; Violet (VIOLA sp.)
EXPERIMENTAL DOSE: 20 fl oz/100 gal
APPLICATION METHODS: Foliage sprays and root drenches at once, twice and five times normal dosages; equivalent amount of wetting agent added; normal active ingredient in spray and drench, 0.02%
EXPERIMENTAL CONDITIONS: Greenhouse and field study; treatments replicated 3 times; sprays applied til plants thoroughly drenched; root drenches applied at rate of 1/4 pint solution per 5-in. pot and 1/2 pint per 10-in. pot
EFFECTS: Begonia--0.02% drench and 0.04% spray caused bleached edge, speckled necrosis of lamina, and petal discoloration and distortion; chrysantemum--no damage at 5 times normal rate; cineraria--0.02% drench and 0.04% spray bleached leaf edges and scorched lamina; coleus-spray and drench at 0.10% caused speckle of leaf edge and lamina and apatchy scorch with some interveinal discoloration; geranium--0.02% drench and 0.10% spray caused scorching and bleaching of leaf margins; polyanthus--0.10% spray and root drench caused leaf scorch and chlorosis; St. Paulia--0.02% spray and drench spoiled open flowers and damaged other plant parts; violets--0.04% spray caused bleached necrosis
COMMENTS: Values under effects are minimum phytotoxic dosages
REFERENCE: Dennis, E.B. and C.A. Edwards, "Phytotoxicity of Insecticides and Acaricides II. Flowers and Ornamentals," Plant Pathol. 12:27-36 (1963).

<200>
CHEMICAL NAME: Acetamide, 2-fluoro-
CHEMICAL COMMON NAME: Fluoracetamide
PLANT: Beet (BETA sp.); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 20 fl oz/100 gal
APPLICATION METHODS: Postemergence spray--normal dosage of 0.02% active ingredient, miscible formulation plus wetting agent
EXPERIMENTAL CONDITIONS: Field grown crops; 3 replications; treatments of once, twice, and five times normal dosage
EFFECTS: No damage
COMMENTS: Technical commercially produced grades of chemicals used
REFERENCE: Dennis, E.B. and C.A. Edwards,"Phytotoxicity of Insecticides and Acaricides," Plant Pathol. 10(2):54-60 (1961).

<201>
CHEMICAL NAME: Acetamide, 2,2-dichloro-N-[2-hydroxy-1-(hydroxymethyl)-2-(4-nitrophenyl)ethyl]-, [R-(R*,R*)]
CHEMICAL COMMON NAME: Chloramphenicol
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1, 3, and 10 m M
APPLICATION METHODS: Solution addition to excised roots
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Inhibited glucose uptake and reduced respiration as well as sulfate-incorporation into proteins
COMMENTS: Chloramphenicol inhibited glucose uptake of isolated wheat roots; after a short lag-period during

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<201> CONT.
equilibration, inhibition of permeability increased up to 90 per cent after 3 hr; inhibiting effect of chloramphenicol on uptake of solutes by plants seems general phenomenon; protein synthesis also blocked, either directly or perhaps by effect on permeability
REFERENCE: Beaud-Lenoel, C. and C. De Gournay-Margeris, "Some Effects of Chloramphenicol on Isolated Wheat Roots," Phytochem. 1:267-275 (1962).

<202>
CHEMICAL NAME: Acetamide, 2,2-dichloro-N-[2-hydroxy-1-(hydroxymethyl)-2-(4-nitrophenyl)ethyl]-, [R-(R*,R*)]
CHEMICAL COMMON NAME: Chloramphenicol
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Foliar spray daily for 12 days
EXPERIMENTAL CONDITIONS: Laboratory study; chloroplasts harvested from green and chlorotic leaves, homogenized, isolated, and purified; temperature--2C; electrophoresis
EFFECTS: Inhibited chlorophyll-complex synthesis
COMMENTS: Chloramphenicol, streptomycin, and oxytetracyclin inhibited synthesis of two chlorophyll-protein complexes and two other proteins; uncertain whether absent or weak bands of complexes result of inhibited protein synthesis or result of deficient chlorophyll
REFERENCE: Machold, O., "Lamellar Proteins of Green and Chlorotic Chloroplasts as Affected by Iron Deficiency and Antibiotics," Biochim. Biophys. Acta 238:324-331 (1971).

<203>
CHEMICAL NAME: Acetamide, 2,2-dichloro-N,N-di-2-propenyl-
CHEMICAL COMMON NAME: R-25788
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1X10(-5)M
APPLICATION METHODS: Addition to Hoagland's nutrient solution in which intact corn plants were growing
EXPERIMENTAL CONDITIONS: Laboratory study; hydroponic culture of corn; R-25788 and EPTC added to solution in varied sequences; C(14) labelled EPTC used in some experiments
EFFECTS: No adverse effect on corn plants; R-25788 blocked injury caused by EPTC
COMMENTS: R-25788 protected corn from injury by EPTC; R-25788 did not reduce EPTC uptake or alter EPTC distribution in plants; extracts from plants treated with EPTC plus R-25788 contained less unaltered EPTC than plants which received no R-25788; in R-25788 plus EPTC treated corn seedlings more CO(2) and EPTC vapors were released than from seedlings treated with EPTC alone
REFERENCE: Chang, F. Y., G. R. Stephenson, and J. D. Bandeen, "Effects of N,N-Diallyl-2,2-Dichloroacetamide on Ethyl N,N-Di-n-propylthiocarbamate Uptake and Metabolism by Corn Seedlings," J. Agric. Food Chem. 22(2):245-248 (1974).

<204>
CHEMICAL NAME: Acetamide, 2,2,2-trichloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 and 30 lb/A
APPLICATION METHODS: Preemergence treatment as 5 ml of 2% aqueous acetone solution
EXPERIMENTAL CONDITIONS: Wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting; controls received only 2% acetone solution; results taken 14 days after emergence of control seeds
EFFECTS: Abnormal growth
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<205>
CHEMICAL NAME: Acetamide, 2,2,2-trichloro-N,N-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 and 30 lb/A
APPLICATION METHODS: Preemergence treatment as 5 ml of 2% aqueous acetone solution
EXPERIMENTAL CONDITIONS: Wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting; controls received only 2% acetone solution; results taken 14 days after emergence of control seeds
EFFECTS: Slightly abnormal wheat growth, abnormal cabbage growth
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<206>
CHEMICAL NAME: Acetamide, 2,3,6-trichlorophenyl-
CHEMICAL COMMON NAME: 2,3,6-Trichlorophenylacetamide
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: At 20.0 lb rate, effective control over prolonged period
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<207>
CHEMICAL NAME: Acetamide, 3-(2,4-dichlorophenoxy)-N-(3',4'-dichlorophenyl)-
PLANT: Mustard, white (SINAPIS ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 4.0 kg/ha; WP; 25% active compound; 5% lye, 5% Emmulat P-141, and 65% kaolin
APPLICATION METHODS: Pre- and postemergence applications; method not specified
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: No adverse effect in preemergence but growth malformation of mustard and wheat in postemergence application
COMMENTS: Synthesized 3,4-dichloroanilides had no or little herbicidal activity, as compared with high activity of known herbicides, 3,4-dichloropropionanilide and 2,4-dichlorophenoxyacetic acid; introduction of phenoxy groupings into acid moiety of active fatty acid-3,4-dichloroanilides as well as introduction of 3,4-dichloroaniline group into carboxylic group of active phenoxyacetic acids decreased herbicidal activity
REFERENCE: Matolcsy, G. and M. Hamran, "The Herbicidal Effect on Some Substituted Anilides," Weed Res. 4(2):118-122 (1963).

<208>
CHEMICAL NAME: Acetamide, 3-(3,5-dichlorophenoxy)-N-(3',4'-dichlorophenyl)-
PLANT: Mustard, white (SINAPIS ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 4.0 kg/ha; WP; 25% active compound; 5% lye, 5% Emmulat P-141, and 65% kaolin
APPLICATION METHODS: Pre- and postemergence applications; method not specified
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Kill of mustard in preemergence and leaf damage in postemergence spray
COMMENTS: Synthesized 3,4-dichloroanilides had no or little herbicidal activity, as compared with high activity of known herbicides, 3,4-dichloropropionanilide and 2,4-dichlorophenoxyacetic acid; introduction of phenoxy groupings into acid moiety of active fatty acid-3,4-dichloroanilides as well as introduction of 3,4-dichloroaniline group into carboxylic group of active phenoxyacetic acids decreased herbicidal activity
REFERENCE: Matolcsy, G. and M. Hamran, "The Herbicidal Effect on Some Substituted Anilides," Weed Res. 4(2):118-122 (1963).

<209>
CHEMICAL NAME: Acetamide, 3-(4-chloro-2-methylphenoxy)-N-(3',4'-dichlorophenyl)-
PLANT: Mustard, white (SINAPIS ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 4.0 kg/ha; WP; 25% active compound; 5% lye, 5% Emmulat P-141, and 65% kaolin
APPLICATION METHODS: Pre- and postemergence applications; method not specified
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Retarded growth of white mustard in preemergence but no further adverse effects
COMMENTS: Synthesized 3,4-dichloroanilides had no or little herbicidal activity, as compared with high activity of known herbicides, 3,4-dichloropropionanilide and 2,4-dichlorophenoxyacetic acid; introduction of phenoxy groupings into acid moiety of active fatty acid-3,4-dichloroanilides as well as introduction of 3,4-dichloroaniline group into carboxylic group of active phenoxyacetic acids decreased herbicidal activity
REFERENCE: Matolcsy, G. and M. Hamran, "The Herbicidal Effect on Some Substituted Anilides," Weed Res. 4(2):118-122 (1963).

<210>
CHEMICAL NAME: Acetate, butyl-(iso)-beta-naphthoxy-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<211>
CHEMICAL NAME: Acetate, butyl-(n)-beta-naphthoxy-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity approximately equal to alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<212>
<212>
CHEMICAL NAME: Acetate, cyclohexyl-beta-naphthoxy-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity approximately equal to alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<213>
CHEMICAL NAME: Acetate, ethyl-alpha-naphthoxy-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Some inhibition of charlock germination (percent inhibition not given); little or no effect on oat growth or germination
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<214>
CHEMICAL NAME: Acetate, ethyl-beta-naphthoxy-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity approximately equal to alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<215>
CHEMICAL NAME: Acetate, methyl-beta-naphthoxy-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<216>
CHEMICAL NAME: Acetate, phenylmercuryammonium-
CHEMICAL COMMON NAME: PMAA
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 4, 8, and 16 oz/lb
APPLICATION METHODS: Application to seed prior to planting
EXPERIMENTAL CONDITIONS: Field study; wheat seed infected; time period--1967-1971
EFFECTS: Stand reductions up to 46%
COMMENTS: Control of loose smut of wheat obtained with benomyl and carboxin in field trials of 3 and 5 years, respectively; either compound applied as seed dressing of 4 oz or more per hundredweight gave adequate control; there was a 10% reduction in seedling emergence with 16 oz/100 lb benomyl in 1969; both compounds were compatible with methylmercury fungicide overtreatments
REFERENCE: Jones, J.P. and F.C. Collins, "Control of Loose Smut of Wheat With Carboxin and Benomyl," Plant Dis. Rep. 55(12): 1053-1055(1971).

<217>
CHEMICAL NAME: Acetate, propyl-(iso)-beta-naphthoxy-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<218>
CHEMICAL NAME: Acetate, propyl-(n)-beta-naphthoxy-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<219>
CHEMICAL NAME: Acetate, 1-pentachlorophenoxy-2,3-propanedi-
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 1000 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: Toxicity rating of 3
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<220>
CHEMICAL NAME: Acetate, 3-phenyl-1,1-dimethylurea-trichloro-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<221>
CHEMICAL NAME: Acetic acid
CHEMICAL COMMON NAME: Acetic acid
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.1 and 50 mM
APPLICATION METHODS: Solutions added to sand in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--20 C; in dark; roots measured
EFFECTS: Growth reduction at 5.0 mM and higher concentrations; germination totally inhibited at 15 mM
COMMENTS: Products of aerobic process stimulated root extension of barley seedlings, whereas anaerobic fermentation yielded products which inhibited growth; acetic acid phytotoxin present in greatest amount
REFERENCE: Lynch, J.M., "Phytotoxicity of Acetic Acid Produced in the Anaerobic Decomposition of Wheat Straw," J. Appl. Bact. 42(1):81-87 (1977).

<222>
<222>
CHEMICAL NAME: Acetic acid
CHEMICAL COMMON NAME: Acetic acid
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: Slight damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<223>
CHEMICAL NAME: Acetic acid
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 3x10(-3) M
APPLICATION METHODS: Submersion of oat coleoptiles
EXPERIMENTAL CONDITIONS: Laboratory study; oat coleoptile assay--increased or inhibited growth of 3mm sections in solutions containing sucrose, IAA, and experimental compounds; coleoptile age--66-69 hr (and at other times)
EFFECTS: Growth stimulation
COMMENTS: Most organic acids accelerated growth in absence of inhibitor but in presence of auxin and sucrose or auxin alone, inhibition of growth by low concentrations of iodoacetate and reversal of inhibition by certain organic acids; sensitivity of sections both to inhibitor and to growth promoting effect of the acids varied with age of the plants; lowest concentration causing definite inhibition steadily decreased with increasing age
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. I. The Action of Iodoacetate and Organic Acids on the AVENA Coleoptile," Am. J. Bot. 35:271-281 (1948).

<224>
CHEMICAL NAME: Acetic acid, ([1,1'-biphenyl]-yloxy)-6-chloro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 91% or greater root and 61-90% stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 11-30% root and no stem inhibition at 1000 ppm
COMMENTS: Attempted correlation of herbicidal activity with chemical structure; herbicidal activity correlated linearly with pk-value; the greater the number of chlorine atoms on the aromatic ring, the less the phytotoxic activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on the Phenylphenol Derivatives with Biological Activity, Part II. The Herbicidal Activity of Chloro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):353-358 (1968).

<225>
CHEMICAL NAME: Acetic acid, ([1,1'-biphenyl]-2yloxy)-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 11-30% root and no stem inhibitiion at 100 ppm, 61-90% root and complete stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, 10% or less root and 11-30% stem inhibition at 100 ppm, complete root and 61-90% stem inhibition at 1000 ppm
COMMENTS: Attempted correlation of herbicidal activity with chemical structure; herbicidal activity correlated linearly with pk-value; the greater the number of chlorine atoms on the aromatic ring, the less the phytotoxic activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on the Phenylphenol Derivatives with Biological Activity, Part II. The Herbicidal Activity of Chloro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):353-358 (1968).

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CHEMICAL NAME: Acetic acid, ([1,1'-biphenyl]-2yloxy)-2'-chloro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and

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seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 10% or less root and no stem inhibition at 100 ppm, 61-90% root and 31-60% stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, 31-60% root and no stem inhibition at 100 ppm, 61-90% root inhibition at 1000 ppm
COMMENTS: Attempted correlation of herbicidal activity with chemical structure; herbicidal activity correlated linearly with pk-value; the greater the number of chlorine atoms on the aromatic ring, the less the phytotoxic activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on the Phenylphenol Derivatives with Biological Activity, Part II. The Herbicidal Activity of Chloro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):353-358 (1968).

<227>
CHEMICAL NAME: Acetic acid, ([1,1'-biphenyl]-2yloxy)-4-chloro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective petri dishes; 14 radish or rice seeds germinated in each dish at 2° C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 31-60% root and no stem inhibition at 100 ppm, 61-90% root and 61-90% stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, no root and no stem inhibition at 1000 ppm
COMMENTS: Attempted correlation of herbicidal activity with chemical structure; herbicidal activity correlated linearly with pk-value; the greater the number of chlorine atoms on the aromatic ring, the less the phytotoxic activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on the Phenylphenol Derivatives with Biological Activity, Part II. The Herbicidal Activity of Chloro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):353-358 (1968).

<228>
CHEMICAL NAME: Acetic acid, ([1,1'-biphenyl]-2yloxy)-4,6-dichloro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 10% or less root and no stem inhibition at 100 ppm, 91% or greater root and 91% or greater stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 61-90% root and 11-30% stem inhibition at 1000 ppm
COMMENTS: Attempted correlation of herbicidal activity with chemical structure; herbicidal activity correlated linearly with pk-value; the greater the number of chlorine atoms on the aromatic ring, the less the phytotoxic activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on the Phenylphenol Derivatives with Biological Activity, Part II. The Herbicidal Activity of Chloro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):353-358 (1968).

<229>
CHEMICAL NAME: Acetic acid, ([1,1'-biphenyl]-4yloxy)-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 61-90% root and 61-90% stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, no root and 10% or less stem inhibition at 100 ppm, 61-90% root and 31-60% stem inhibition at 1000 ppm
COMMENTS: Attempted correlation of herbicidal activity with chemical structure; herbicidal activity correlated linearly with pk-value; the greater the number of chlorine atoms on the aromatic ring, the less the phytotoxic activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on the Phenylphenol Derivatives with Biological Activity, Part II. The Herbicidal Activity of Chloro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):353-358 (1968).

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<230>
CHEMICAL NAME: Acetic acid, ([1,1'-biphenyl]yloxy)-
PLANT: Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 40 mg of lanolin preparation (1% experimental compound)
APPLICATION METHODS: Applied directly to primary leaf pulvinus
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No effect noted
COMMENTS: 4-chlorophenoxyacetic acid very active as was 4-chlorophenyl ester; slight effect noted within two days after application; within ten days stems badly swollen and trifoliate leaves dwarfed
REFERENCE: Kalinowski, M.L. and L.W. Kalinowski, "Cyclization of Phenoxyacetic Acid and Some Chlorophenoxyacetic Acids," J. Chem. Soc. 70:1970-1971 (1948).

<231>
CHEMICAL NAME: Acetic acid, (beta-naphthoxy)-, sodium salt
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<232>
CHEMICAL NAME: Acetic acid, (pentachlorophenoxy)-
CHEMICAL COMMON NAME: PCPAA
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 5.76 to 4.65 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<233>
CHEMICAL NAME: Acetic acid, (pentachlorophenoxy)-, butyl ester
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 250 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: Toxicity rating of 3
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<234>
CHEMICAL NAME: Acetic acid, (tetrachlorophenoxy)-, butyl ester
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 125 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: Toxicity rating of 4
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<235>
CHEMICAL NAME: Acetic acid, (tetrachlorophenoxy)-, ethyl ester
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 500 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: Toxicity rating of 3
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<236>
CHEMICAL NAME: Acetic acid, (2-chloroethoxy)-
CHEMICAL COMMON NAME: Ethyl chloroacetate
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 3.2%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<237>
CHEMICAL NAME: Acetic acid, (2-chlorophenoxy)-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Severe damage to peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<238>
CHEMICAL NAME: Acetic acid, (2-chlorophenoxy)-
PLANT: Hyacinth, water (EICHHORNIA HASTAEFOLIA)
EXPERIMENTAL DOSE: 0.1 to 100.0 ppm
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Death within 10 days at 0.1 ppm
COMMENTS: Responses recorded for plants subjected to treatment with vapors or with aqueous sprays; epinasty and curvatures, browning, root-abcission and death; all plants in tapwater containing any of formagenic substances began to brown immediately and died within 48 hours
REFERENCE: King, G.S., "Some Responses of Water Hyacinth to Formagens," La. Acad. Sci. Proc. 10:35-41 (1947).

<239>
CHEMICAL NAME: Acetic acid, (2-chlorophenoxy)-, sodium salt
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity approximately equal to alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<240>
CHEMICAL NAME: Acetic acid, (2-methyl-4-chlorophenoxy)thio-
CHEMICAL COMMON NAME: Thio-MCPA
PLANT: Linseed (LINUM USITATISSUM); Wheat (TRITICUM AESTIVUM); Cress (BARBAREA sp.); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 5X10(-6) to 1X10(-2) M
APPLICATION METHODS: Postemergence spray (plants removed from culture solution); dipping intact plants in solutions (2 hr); addition to culture solution in small amounts

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EXPERIMENTAL CONDITIONS: Laboratory study; hydroponically cultured test plants; artificial light; temperature--22 C
EFFECTS: Reduced growth of all test plants with varied growth abnormalities; generally less injurious to flax, wheat, and peas, but more injurious to cress
COMMENTS: Specificity of the thio compounds differs from acetic acids; thio-2,4-D less active on wheat but more active on cress and peas; thio-2,4,5-T decidedly more active on wheat but probably less on peas
REFERENCE: Burstrom, H., B. Sjoberg, and B. A. M. Hansen, "The Plant Growth Activity of Phenoxythioacetic Acids," Acta Agric. Scand. 6:155-177 (1956).

<241>
CHEMICAL NAME: Acetic acid, (2-methylphenoxy)-, sodium salt
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all comounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula Aryl OCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<242>
CHEMICAL NAME: Acetic acid, (2-pentachlorophenoxy)-, ethyl ester
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 500 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: Toxicity rating of 3
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<243>
CHEMICAL NAME: Acetic acid, (2-pentynyl)-3-oxocyclopentyl-, methyl ester
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 79; percent germination, 40
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<244>
CHEMICAL NAME: Acetic acid, (2,4-dibromophenoxy)-
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 50 ml solution
APPLICATION METHODS: Aqueous spray applied in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: No significant effects
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<245>
CHEMICAL NAME: Acetic acid, (2,4-dichloro-alpha-naphthoxy)-, sodium salt
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A.
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<246>
CHEMICAL NAME: Acetic acid, (2,4-dichloro-6-methylphenoxy)-, ammonium salt
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 50 ml solution
APPLICATION METHODS: Agueous spray applied in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: No significant effects
REFERENCE: Ennis, W.B., C.P. Swanson, P.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<247>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Parsley-piert (ALCHEMILLA MICROCORPA);Henbit (LAMIUM AMPLEXICAULE);Chickweed, common (STELLARIA MEDIA);Speedwell, corn (VERONICA ARVENSIS);Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 1.1 and 2.2 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l./ha; surfactant--0.5%
EXPERIMENTAL CONDITIONS: Field study; 3 locations in GA; time period--1972-1974; evaluation time--42 to 85 days; bermudagrass dormant when sprayed
EFFECTS: Effective control of parsley-piert, chickweed, and corn speedwell but higher application rate and 2 applications sometimes necessary; moderate control of henbit; no adverse effect on bermudagrass
COMMENTS: Herbicides controlled all weed species with single application; herbicides had less activity on parsley-piert and corn speedwell than on henbit and common chickweed; single applications of either cisanilide or methazole gave excellent parsley-piert controll; paraquat satisfactorily controlled more weed species with a single application than any other herbicide treatment
REFERENCE: Johnson, B.J., "Broadleaf Weed Control in Dormant Bermudagrass Turf," Agron. J. 67(1):689-692 (1975).

<248>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Oak, red (QUERCUS RUBRA);Oak, white (QUERCUS ALBA);Hickory (CARYA sp.);Witch hazel (HAMAMELIS sp.);Pine (PINUS sp.);Maple (ACER sp.);Poplar (POPULUS sp.);Alder (ALNUS sp.)
EXPERIMENTAL DOSE: 12.0 lb/A
APPLICATION METHODS: High volume broadcast basal application, 100 gpa
EXPERIMENTAL CONDITIONS: Field study; control of brush growing on rights-of-way; time period--1968 to 1971
EFFECTS: Moderate control of brush and trees
COMMENTS: On basis of effectiveness, several combined mixes of herbicides appear about as effective as 2,4,5-T in brush eradication despite considerable variation in effects
REFERENCE: Chappell, W.E., "Herbicidal Mixtures for the Control of Mixed Brush in Right-of-Way," Proc. South. Weed Sci. Soc. 26:306-309 (1973).

<249>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Pea, sweet (PISUM SATIVUM); Velvetleaf (ABUTILON THEOPHRASTI)
EXPERIMENTAL DOSE: 0.07-1.68 kg/ha
APPLICATION METHODS: Postemergence spray; butoxyethanolester and alkanolamine salt formulations; 2,4-D(C-14) labeled compounds also used--droplets applied to leaves
EXPERIMENTAL CONDITIONS: Environmental chamber study; pot culture, 2 plants/pot; spray pH--7.0; light--0.15 langley/min, modified solar radiation in out door chambers; temperature--8 to 31 C; evaluation times--1,5, and 10 days; absolute humidity--3.8 to 16.1 g/m(3); plants preconditioned with light, temperature, and humidity before exposure to 2,4-D
EFFECTS: Pretreatment light, temperature, and humidity conditions play only minor role in determining response of peas and velvetleaf to 2,4-D;
COMMENTS: Peas under solar or fluorescent-incandescent lamp radiation, in high or low humidity, or in temperatures between 10 and 25 C prior to treatment did not influence response to 2,4-D; response of velvetleaf to 2,4-D slightly greater when pretreatment growth under solar radiation rather than under fluorescent-incandescent lamps
REFERENCE: Darwent, A.L. and R. Behrens, "Effect of Pretreatment on 2,4-D Phytotoxicity," Weed Sci. 20(6):540-544 (1972).

<250>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Larkspur (DELPHINIUM BARBEYI)
EXPERIMENTAL DOSE: 0.375 to 1.0 lb/A
APPLICATION METHODS: Individual application to base of plant and as spray at flowering stage
EXPERIMENTAL CONDITIONS: Field study; applied in conjunction with urea (22, 44, and 88 lb N/acre); evaluation--1,2, or 10-12 yr
EFFECTS: Slight control with application at base of plant; no or slight control after one or two years with sprays at flowering stage, but effective control after 10 yr when applied in conjunction with urea or ammonium sulfate
COMMENTS: Larkspur poisonous to cattle; nitrogen in urea and ammonium sulfate alone or in combination with herbicides effectively controlled larkspur 10 yr after application; 2,4-D and 2,4,5-T combined treatment also effective; fenuron and DB granular (sodium tetraborate) effective for one year only
REFERENCE: Binns, W., L.F. James, and A.E. Johnson, "Control of Larkspur with Herbicides Plus Nitrogen Fertilizer," J. of Range Manage. 24(2):110-113 (1971).

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<251>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Capewood (ARCTOTHECA CALENDULA); Oat (AVENA SATIVA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.35 and 0.70 kg/ha
APPLICATION METHODS: Postemergence spray; 112 l./ha; amine and ester Formulations
EXPERIMENTAL CONDITIONS: Field study; time period-- 1966 to 1970; 5 locations in Australia
EFFECTS: Moderate control of capeweed with no adverse effect on crop yields; neither formulation consistently more effective than other
COMMENTS: Most satisfactory herbicides tested for control of capeweed were bromoxynil, linuron, diquat and prometryne; in one year tested, methabenzthiazuron effective
REFERENCE: Beeves, T.G. and J.M. Lumb, "Selective Chemical Control of Capeweed in Wheat," Aust. J. Exp. Agric. Anim. Husb. 12:60-64 (1972).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Sowthistle, perennial (SONCHUS ARVENSIS); Sowthistle, annual (SONCHUS OLERACEUS); Sowthistle, annual spiny (SONCHUS ASPER)
EXPERIMENTAL DOSE: 0.14 and 0.28 kg/ha
APPLICATION METHODS: Applications broadcast over pots when plants were 10 to 15 cm tall using a pot sprayer delivering 54 l./ha at 2.46 kg/cm2 pressure
EXPERIMENTAL CONDITIONS: Greenhouse experiments; embryo culture assured survival of seedlings; observations made 30 days after herbicide treatments; treatments applied to perennial and annual sowthistle plants and to progeny (perennial x annual) backcrossed with parents
EFFECTS: Annual sowthistle -- 50% recovery; 0.14 kg/ha; perennial sowthistle -- no recovery, 0.14 kg/ha; backcrosses to annual sowthistle -- 41-47% recovery, 0.14 kg/ha; backcrosses to perennial sowthistle -- 0-4% recovery, 0.14 kg/ha; perennial -- effective control, 0.28 kg/ha; annual and spiny - poor control, 0.28 kg/ha
COMMENTS: Annual sowthistle and backcrosses to annual sowthistle more tolerant to 2,4-D and dicamba than perennial sowthistle or backcrosses to perennial sowthistle; natural crosses may explain perennial sowthistle variability to herbicides
REFERENCE: Alam, S., A.R. Bell, T.S. Hsieh, J.D. Nalewaja, and A.B. Schooler, "Herbicide Response of Interspecific Sowthistle Crosses," Weed Sci. 21(3):189-193(1973).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Pea, scurf (PSORALEA CORYLIFORA)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Solutions applied to seed
EXPERIMENTAL CONDITIONS: Environmental chamber; seed germination in petri plates with filter paper; temperature--35 C; continuous light; scarification by abrasion and chemically; soaking in test solutions for 8 hr
EFFECTS: Reduced germination (at least 50%) at concentrations of 200 ppm and higher; 8 hr soak of scarified seed
COMMENTS: Inhibition of germination of acid-scarified pods increased with increase in concentration; inhibition irreversible and led to death of seed in pod; mortality, expressed as percentage of dead pods, highest for 2,4,5-T and IAA and lowest for GA.
REFERENCE: Shukla, S.P., "The Effects of Some Chemicals on the Germination of a Weed, PSORALEA CORYLIFOLIA L.," Weed Res. 12(4):293-300 (1972).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Castorbean, volunteer (RICINUS COMMUNIS); Cotton (GOSSYPIUM HIRSUTUM); Sorghum, grain (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.27 and 0.5 kg/ha
APPLICATION METHODS: Postemergence spray; 188 l/ha
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; time period--1968 to 1970
EFFECTS: Slight to effective control (results variable) of volunteer castorbean with no adverse effect to crops
COMMENTS: Volunteer castorbean most effectively controlled by preemergence application of propazine in grain sorghum and by fluometuron in cotton; preplant applications of propazine not as effective as preemergence treatments.
REFERENCE: Smith, D.T., A.W. Cooley, D.O. Mooney, and A.F. Wiese, "Herbicidal Control of Volunteer Castorbean," Weed Sci. 20(4):338-340 (1972).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Bursage, wollyleaf (FRANSERIA TOMENTOSA)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Soil sterilant application with and without incorporation; postemergence sprays at varied stages of plant development; liquid sprays at 188 l/ha; pellets or granules broadcast by hand; amine and ester formulations
EXPERIMENTAL CONDITIONS: Field study; non-crop areas; time period--1962 to 1968; evaluation time--up to 3 yr; soil--clay loam
EFFECTS: Ester formulation gave effective control for at least 12 mos if applied at budding or earlier;

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effective control for two years if spray application made prior to bud development
COMMENTS: Fenac controlled woollyleaf bursage for 3 years in noncropped areas; effective control of woollyleaf bursage obtained when treated at bud stage or earlier with ester formulation of 2,4-D
REFERENCE: Smith, D.T., A.F. Wiese, and A.W. Cooley, "Woollyleaf Bursage Response to Selected Herbicides," Weed Sci. 20(6):554-556 (1972).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Late spring application; spray treatment at rate of 50 gpa
EXPERIMENTAL CONDITIONS: Treatments to bluegrass sod and to plots of only nutsedge; 4 x 5 ft plots with 3 replications
EFFECTS: Poor nutsedge control; minor turfgrass injury
COMMENTS: Nutsedge control easier as season progresses; nutsedge easier to control on turfgrass than on bare soil; 1-inch rainfall after second spring application may have reduced effectiveness
REFERENCE: Jagschitz, J.A., "Postemergence Crabgrass and Nutsedge Control in Turfgrass with Herbicides," Proc. Northeast. Weed Sci. Soc. 29:376-381 (1975).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Rice (LEERSIA ORYZOIDES); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.5 kg/ha
APPLICATION METHODS: Treatment 21 days after seeding; knapsack spray application at 670 dm(3)/ha
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; 3 x 5 m plots; visual toxicity and weed control ratings
EFFECTS: Poor control of nutsdedge, minor rice toxicity
COMMENTS: Propanil/2,4-D mixtures--better nutsedge control, slightly increased rice toxicity
REFERENCE: Aryeetey, A.N., "Chemical Weed Control in Rice in Ghana," Ghana J. Agric. Sci. 6:199-204 (1973).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 to 100 mg/2500 g soil or 50 lb/A
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; leaching and degradation experiments over time periods up to 3 mo; field study
EFFECTS: Typical 2,4-D symptoms on tomato leaves at higher concentrations with little leaching for up to 6-8 wk; reduced soybean germination for 51 da in field
COMMENTS: 2,4-D and IPC when applied in excessive amounts, readily leached from soil; when leaching prevented, former compound inactivated; 2-methyl-4-chlorophenoxyacetic acid and 2,4,5-trichlorophenoxyacetic acid much more persistent, and herbicidally active for longer period of time than 2,4-D
REFERENCE: DeRose, H. R., "Persistence of Some Plant Growth-Regulators When Applied to the Soil in Herbicidal Treatments," Bot. Gaz. 106:583-589 (1946).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Linseed (LINUM USITATISSUM); Wheat (TRITICUM AESTIVUM); Cress (BARBAREA sp.); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 5X10(-6) to 1X10(-2) M
APPLICATION METHODS: Postemergence spray (plants removed from culture solution); dipping intact plants in solutions (2 hr); addition to culture solution in small amounts
EXPERIMENTAL CONDITIONS: Laboratory study; hydroponically cultured test plants; artificial light; temperature--22 C
EFFECTS: Reduced growth of all test plants with varied abnormalities; stimulated growth of pea at low concentration; generally less active on flax, cress, and peas than thio-2,4-D but more active on wheat
COMMENTS: Specificity of the thio compounds differs from acetic acids; thio-2,4-D less active on wheat but more active on cress and peas; thio-2,4,5-T decidedly more active on wheat but probably less on peas
REFERENCE: Burstrom, H., B. Sjoberg, and B. A. M. Hansen, "The Plant Growth Activity of Phenoxythioacetic Acids," Acta Agric. Scand. 6:155-177 (1956).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 9 and 6% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Radish (RAPHANUS SATIVUS); Ryegrass, perennial (LOLIUM PERENNE); Bentgrass, black (AGROSTIS GIGANTEA); Plants; Redtop (AGROSTIS ALBA); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 0.13, 0.25, and 0.5 lb/1000 sq ft; ammonium, calcium, potassium, sodium, and ester formulations
APPLICATION METHODS: Added to soil
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: Effective weed control with delayed germination of some cultivated species; ester less effective than other formulations
COMMENTS: Several fertilizers and chemicals inhibited weed growth either by killing seeds or by killing seedlings shortly after germination; materials applied dry or as spray solutions and thoroughly mixed by cultivation or raking into upper 2 or 3 inches of soil; period of time after treatment before grass, radishes, alfalfa, or seedlings of tomato, cabbage, or other crops could be planted safely varied with different materials and amounts applied; sterilizing soils with fertilizers or chemicals appears very practical method of controlling weeds and fertilizing seedbeds in one operation; especially true of fertilizers which do not appreciably alter soil complex and which do not leave residual toxicity for long periods
REFERENCE: DeFrance, J.A., R.S. Bell, and T.E. Odland, "Killing Weed Seeds in the Grass Seedbed by the Use of Fertilizers and Chemicals," J. Am. Soc. Agron. 39:530-535 (1947).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 1.0 to 8.0 pt/A; 2.5 and 4.0 lb/A; ester
APPLICATION METHODS: Cane set germination (sprouting)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--5 wk
EFFECTS: No adverse effect on cane set germination
COMMENTS: Karmex-2,4-D ester appeared to cause depression in cane yields but compensated for this by an improvement in juice quality; overall improvement in cane yields and juice quality resulting from Gesapax-Actril-D treatment quite noticeable as it outyielded all others; only Daconate seemed to result in noticeable sugar yield depression primarily because of its adverse effect on juice quality; dalapon and gramoxone in combination with 2,4-D ester did not seriously affect yields
REFERENCE: Maddan, W.L. and E.M. Christie, "Weed Control at Monymusk," Jamaican Assoc. Sugar Tech. 33:76-82 (1972).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Bermudagrass, common (CYNODON DACTYLON); Nutsedge, purple (CYPERUS ROTUNDUS); Bindweed, field (CONVOLVULUS ARVENSIS); Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: Experiment 1--2 to 8 lb per season; experiment 2--1, 2, 4 and 8 lb/A
APPLICATION METHODS: Experiment 1--2 lb/A repeated application; experiment 2--fall, spring and early summer applications
EXPERIMENTAL CONDITIONS: Experiment 1--weed control evaluated on basis of commercial control (70 to 100%); experiment 2--weed control evaluated on basis of commercial control (70 to 100%), 3-4 replications, only plant tested was bindweed
EFFECTS: Experiment 1--commercially unacceptable to all plants except bindweed at 2 to 4 lb, commercially unacceptable to johnson grass and bermuda grass, variable results with nutsedge and acceptable control of bindweed at 4 to 8 lb; experiment 2--acceptable bindweed control only at 8 lb/A

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COMMENTS: Article primarily concerns glyphosate as effective perennial weed killer--described as being nonselective; results of 3 studies presented only in tabular form; experiment 2 results reported on basis of average values
REFERENCE: Lange, A., H. Kempen, W. McHenry, and O. Leonard, "Roundup--A New Perennial Weed Killer," Calif. Agric. 27(2):6-7 (1973).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Sorghum (SORGHUM BICOLOR); Plants
EXPERIMENTAL DOSE: 1 kg/ha
APPLICATION METHODS: Preemergence and postemergence applications as spray in 1000 l. water
EXPERIMENTAL CONDITIONS: 4 replications in randomized block design; rain-fed conditions, light black soil; plot size 610 cm x 458 cm
EFFECTS: Preemergence spray gave insignificant decrease in sorghum stand establishment, some weed control and increased sorghum yield; postemergence spray gave insignificant increase in sorghum stand, some weed control (less than preemergence) and slight increase in sorghum yield
COMMENTS: Combination of simazine (1.25 kg/ha) preemergence plus 2,4-D (1 kg/ha postemergence gave better weed control and higher grain yield
REFERENCE: Krishnamurthy, K., "Effect of Herbicides on Weeds and Yield of Sorghum," Indian J. Agric. Sci. 40(5):474-480 (1970).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Orchard grass (DACTYLIS GLOMERATA); Fescue, creeping red (FESTUCA RUBRA); Timothy (PHLEUM PRATENSE); Bentgrass (AGROSTIS sp.); Plants
EXPERIMENTAL DOSE: 2.0 lb/A; amine and acid
APPLICATION METHODS: Postemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Puget silt loam
EFFECTS: Effective control of weeds with no adverse effect on turf grasses
COMMENTS: Orchardgrass seed yields, significantly decreased by 2,4-D (acid) and silvex (yields from these plots did not differ significantly); silvex and 2,4,5-T ester applications in red fescue plantings significantly decreased seed yield compared to 2,4-D acid and MCPA applications; silvex applications resulted in significantly lower yield of red fescue seed
REFERENCE: Peabody, D.V. and H.M. Austenson, "Herbicides and Their Effect on the Yield of Grass Seed," Agron. J. 57(1):633-634 (1965).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 1.0, 2.5, and 5.0x10(-3)M (3 ml/plant)
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20; sodium salt
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Plant death at all application rates for most proximal root sections but little effect on distal root sections except at 2 highest concentrations
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat, and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--50% or greater inhibition in sorghum, oat, and cucumber at 1 and 10 ppm; shoot--50% or greater inhibition in sorghum but less than 50% in oat at 1 ppm, 50% or greater inhibition in sorghum and oat at 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.28 to 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 168 l/ha
EXPERIMENTAL CONDITIONS: Field study; weed-free plots; 4 locations in Australia; time period--1966 to 1972
EFFECTS: Reduced yield
COMMENTS: All chemicals lowered grain yields to some extent, but variation between chemicals greater for wheat than for barley; in both crops, methabenzthiazuron safest chemical causing only small yield losses at rates up to 2.25 kg/ha
REFERENCE: Elliott, B.R., J.M. Lumb, T.G. Reeves, and T.E. Telford, "Yield Losses in Weed-Free Wheat and Barley Due to Post-Emergence Herbicides", Weed Res. 15(2):107-111 (1975).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Cress (LEPIDIUM SATIVUM); Radish (RAPHANUS SATIVUS); Gram (CICER ARIETINUM); Carrot (DAUCUS CAROTA); Onion (ALLIUM CEPA); Beet, sugar (BETA VULGARIS); Dandelion (TARAXACUM OFFICINALE); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 0.1 to 100 ppm
APPLICATION METHODS: Addition to culture solution and to soil
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination and root growth studied
EFFECTS: Germination and growth inhibited; less effect on germination than coumarin
COMMENTS: Dual nature of phytocidal activity of coumarin; namely, inhibition of both germination and subsequent root-growth; with respect to inhibition of root-growth, one feature of activity of coumarin is similarity to action of 2,4-D and other phytocidal agents of heteroauxin class
REFERENCE: Audus, L.J. and J.H. Quastel, "Coumarin as a Selective Phytocidal Agent," Nature 159(4036):320-324 (1947).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 1.0 to 4.0 lb/A
APPLICATION METHODS: Preplanting spray
EXPERIMENTAL CONDITIONS: Field study, soil--Sassafras loam; evaluation time--7 wk
EFFECTS: Moderate control of broadleaf weeds and effective control of grasses with no adverse effect on crops at 3.0 and 4.0 lb/A
COMMENTS: 2,4-D toxic to both grasses and broadleaf weeds, whereas Sinox only slightly toxic to grasses but very toxic to broadleaf weeds
REFERENCE: Danielson, L.L., "Selectivity of 2,4-D and Sinox When Applied to Soil," Plant Phy. 22:635-636 (1947).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Plants; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 0.8 and 1.6 kg/ha; G and EC
APPLICATION METHODS: Broadcast (G) and spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control and increased rice yield
COMMENTS: 2,4-D and MCPA equally effective in controlling barnyard grass and other annual weeds in transplanted rice; yields significantly increased in nearly all applications; for direct-seeded flooded rice, granular formulations of several new herbicides, such as butachlor, benthiocarb and C-288 highly selective in controlling barnyardgrass and other annual weeds under tropical conditions
REFERENCE: De Datta, S.K., "Chemical Weed Control in Tropical Rice in Asia," PANS 28(4):433-440 (1972).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D amine
PLANT: Sorghum (SORGHUM BICOLOR); Pea, cow- (VIGNA UNQUICULATA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: Cowpea-5.6, 22.4, 44.8, 89.6 and 179 ug/plant; sorghum-89.6, 179, 358, 717 and 1,054 ug/plant
APPLICATION METHODS: Formulation--alkanolamine salts, 1.82 kg/3.79 l.; herbicide solution in water containing 0.5% (v/v) X-77 surfactant was applied on plants
EXPERIMENTAL CONDITIONS: Cowpea plants 10 to 12 days old when treated and sorghum plants were 25 to 28 days old; cowpea leaves treated by depositing 0.1 ml herbicide solution on upper surface, 0.1 ml deposited in partially expanded second true leaf of sorghum; 0.1 ml applied to hypocotyl of cowpea in other tests; germination effects determined by soaking seeds in 10(-7), 10(-6), 10(-5), 10(-4) and 10(-3)M aqueous solutions for 2, 4, and 8 hours, after treatment, seeds washed with 35 ml distilled water--effects recorded for wheat as well as other plants
EFFECTS: 5.6 stimulated cowpea growth, other rates inhibited growth (60% at 179 ug); all rates inhibited sorghum growth, 40% at 89.6 ug and 70% at 1054 ug; 5% cowpea kill at 22.4 ug, about 55% at 179 ug; no desiccation of sorghum at any rate; no significant germination inhibition of sorghum and wheat; cowpea germination inhibited
COMMENTS: Cowpea seedlings more sensitive than sorghum seedlings to 2,4-D amine; low M concentrations stimulated wheat germination
REFERENCE: Baur, J.R. and R.W. Bovey, "Herbicidal Effects of Tebuthiuron and Glyphosate," Agron. J. 67:547-553 (1975).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D amine
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Orach (ATRIPLEX PATULA); Chickweed, common (STELLARIA MEDIA); Speedwell (VERONICA sp.); Sowthistle, annual (SONCHUS OLERACEUS); Knotweed (POLYGONUM AVICULARE); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Wartweed (EUPHORBIA HELIOSCOPIA)
EXPERIMENTAL DOSE: 0.84, 1.12, 1.68, 2.24 and 3.36 kg/ha
APPLICATION METHODS: 4 preemergence application rates and 1 postemergence application rate (1.12 kg/ha); treatments made with knapsack sprayer at a volume of 562 l./ha preemergence and 281 l./ha postemergence
EXPERIMENTAL CONDITIONS: 5 experiments--(1) and (2) rain only, (3) and (4) rain and rain plus irrigation and (5) rain only; Oxford clay soil; rows--3.7 m long and 61 cm apart, final corn density of 11 plants/m(2); split plot, randomized block design with 3 replications
EFFECTS: Experiment 1--best control provided by preemergence 3.36 kg/ha (78%); experiment 2--best control again by 3.36 kg/ha, 86% lamb's-quarters, 95% sowthistle and 50% chickweed, speedwell and orach control; experiment 3--overall weed control, 79% at premergence 2.24 kg/ha rain only and 87% rain plus irrigation, postemergence 1.12 kg/ha gave 86% rain only and 88% rain plus irrigation control; experiment 4--preemergence 2.24 kg/ha gave 51% rain only and 87% rain plus irrigation control; experiment 5--2.24 kg/ha preemergence gave 96% control; no significant effect on maize yield when compared with hand-weeded check
COMMENTS: Orach and speedwell seem to be most aggressive weeds; unsatisfactory weed control if dry period follows application; too much rain can cause crop injury from 2,4-D
REFERENCE: Ludwig, J.W., "Effects of Herbicides on the Productivity of Fodder Maize with Special Reference to Pre-emergence Applications of 2,4-D Amine," Weed Res. 13(1):1-11 (1973).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D-ester
PLANT: Corn (ZEA MAYS); Chickweed, common (STELLARIA MEDIA); Orach (ATRIPLEX PATULA); Lamb's-quarters (CHENOPODIUM ALBUM); Sowthistle, annual (SONCHUS OLERACEUS); Speedwell (VERONICA sp.)
EXPERIMENTAL DOSE: 1.68 and 3.36 kg/ha
APPLICATION METHODS: Preemergence application made with knapsack sprayer at a volume of 562 l./ha
EXPERIMENTAL CONDITIONS: Oxford clay soil; rows--3.7 m long and 61 cm apart, final corn density, 11 plants/m(2); split plot, randomized soil design with 3 replications
EFFECTS: 1.68 kg/ha gave 32% control and 3.36 kg/ha gave 67% control; no significant effect on maize yield when compared with hand-weeded check
COMMENTS: Weed infestation particularly heavy; dry weather following application hampers effectiveness and heavy rains will result in crop injury from 2,4-D--suggestion that 2,4-D cannot be regarded as reliable for preemergence applications
REFERENCE: Ludwig, J.W., "Effects of Herbicides on the Productivity of Fodder Maize with Special Reference to Pre-emergence Applications of 2,4-D Amine," Weed Res. 13(1):1-11 (1973).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D-amine
PLANT: Corn (ZEA MAYS); Chickweed, common (STELLARIA MEDIA); Speedwell (VERONICA sp.); Knotweed (POLYGONUM AVICULARE); Fool's parsley (AETHUSA CYNAPIUM)
EXPERIMENTAL DOSE: 0.56, 1.12 and 2.24 kg/ha
APPLICATION METHODS: Preemergence and postemergence applications with an Oxford Precision Sprayer at 2.11 kg/cm(2) pressure and 225 l./ha volume
EXPERIMENTAL CONDITIONS: Maize sown in plots of 3 rows, 3.7 m long and 61 cm apart; Oxford clay soil; hand weeded controls; weeds assessed in June for preemergence applications made on May 2 and 3 weeks after foliar treatment for postemergence applications; preemergence experiments made under wet conditions
EFFECTS: Preemergence--2.24 kg/ha gave 76% chickweed, 78% speedwell, 54% knotweed and 75% fool's-parsley control; postemergence--0.56 and 1.12 kg/ha gave 34 and 35% knotweed control respectively but insignificant control of other plants, 2.24 kg/ha gave insignificant control of chickweed, 41% speedwell, 79% knotweed and 74% fool's-parsley control; no reduction in maize yield
COMMENTS: Postemergence applications generally less effective than preemergence treatments; results also given of effectiveness of herbicide combinations
REFERENCE: Ludwig, J.W., "The Use of a Low Dose of Atrazine Alone and in Mixtures with Other Herbicides in the Maize Crop," Weed Res. 13:12-18 (1973).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D amine
PLANT: Periwinkle, common (VINCA MINOR); St. John's-wort (HYPERICUM CALYCINUM); (DELASPERMA ALBA); (GAZANIA SPLENDENS); Ivy (HEDERA CANARIENSIS); Ivy, English (HEDERA HELIX); Iceplant (CARPOBROTUS EDULE); Stonecrop (SEDUM BREVIFOLIUM); Bugleweed (AJUGA REPENS)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Postemergence application using a knapsack sprayer at a pressure of 30 psi
EXPERIMENTAL CONDITIONS: Field experiments; July 26 applications--injury evaluations made September 1, September 30 and October 22 of the same year; each treatment replicated 4 times
EFFECTS: V. MINOR--chlorosis; H. CALYCINUM--minor injury; D. ALBA--tip dieback and growth malformation; G. SPLENDENS--no injury; H. CANARIENSIS--no injury; H. HELIX--no injury; C. EDULE--unacceptable injury first month, symptoms reduced with regrowth; S. BREVIFOLIUM--very minor injury; A. REPENS--very minor injury
REFERENCE: Elmore, C.L., W.D. Hamilton, E. Johnson, and T. Kretchun, "Ground Cover Species Tolerance to Herbicide Applications," Calif. Agric. 26(3):3-4 (1972).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Clover, red (TRIFOLIUM PRATENSE)
EXPERIMENTAL DOSE: 0.28 and 0.56 kg/ha
APPLICATION METHODS: Dimethylamine salt; postemergence application as spray in 140 l./ha water
EXPERIMENTAL CONDITIONS: Albright-Landry silt loam to clay loam soils; 2 stage application--as crop began growth (stage 1) and when crop was 7.5--10 cm high (stage 2); split plot design with 6 replications; seed yields determined by harvesting strips from herbicide subplots
EFFECTS: Delayed flowering--0.28 kg/ha caused moderate delay at stage 1 and a severe delay at stage 2; 0.56 kg/ha caused a severe delay at both stages; seed yield--0.28 kg/ha caused an insignificant decrease at stage 1 and a significant decrease at stage 2; no significant effect on germination
COMMENTS: 2,4-D considered too toxic for weed control in red clover that is grown for seed; below normal precipitation, early frost and snow reduced seed yields
REFERENCE: Darwent, A.L. and P. Pankiw, "Effects of Several Herbicides on Red Clover Seed Production," Can. J. Plant Sci. 56:413-415 (1976).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bromegrass, smooth (BROMUS INERMIS); Orchard grass (DACTYLIS GLOMERATA); Wheatgrass, crested (AGROPYRON CRISTATUM); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 1.1, 1.7 and 2.2 kg/ha
APPLICATION METHODS: September and April applications; postemergence treatment in water at spray volume of 127 l./ha and pressure of 2.1 kg/cm(2)
EXPERIMENTAL CONDITIONS: Palouse silt loam; all grasses treated in seedling stage with 1.1 kg/ha bromoxynil to control broadleaf weeds; randomized block experimental design with 3 to 4 replications
EFFECTS: No significant seed yield reduction at any rate with September applications; April applications gave significant seed yield reduction of only bromegrass and fescue at 1.7 and 2.2 kg/ha; seed yields of crested wheatgrass were increased with all rates in both September and April
REFERENCE: Canode, C.L., "Tolerance of Five Cool-Season Perennial Grasses to Selected Herbicides," Agron. J. 66:683-686 (1974).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Plants
EXPERIMENTAL DOSE: 0.1 to 1.0 lb/A
APPLICATION METHODS: Postemergence spray; two applications
EXPERIMENTAL CONDITIONS: Field study, road cracks and road right-of-way
EFFECTS: No adverse effect noted
COMMENTS: Initial postpaving treatment made with beginning of growth in spring; TCA applied at rate of 24 lb/ft-mile, and subsequent applications made as needed; treatment interval about 30 days
REFERENCE: McCully, W. G., W. J. Bowmer, and A. F. Wiese, "Control of Grasses and Weeds Growing in Asphalt Pavements," PANS 16(3):497-504 (1970).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Iris (IRIS sp.); Orange, navel (BREVIPALPUS CALIFORNICUS); Arborvitae, Nare's (THUJA OCCIDENTALIS); False cyprus, goldplume (CHAMAECYPARIS PISIFERA); Juniper, Savin (JUNIPERUS SABINA); Sedge (CYPERUS sp.); Thatch (IMPERTA CYLINDRICA); Thatch (ARUNDINELLA BENGALENSIS); Bermudagrass, common (CYNODON DACTYLON); Panicum (PANICUM ANTIDOTALE); Cutgrass (LEERSIA HEXANDRA); Panikotali (HYGRORYZA ARISTATA); Khorihadol (ECHINOCHLOA COLONUM); (POGONATHERUM CRINITUM); Ronga banspatia (PASPALUM SCROBICULATUM); Samsolokh (EUPATORIUM ODORATUM); Chickweed (AGERATUM CONYZOIDES); Mile-a-minute (MIKANIA MICRANTHA); Bagrahote (BORRERIA HISPIDA); Madhusoleng (POLYGONUM CHINENSE); Smartweed, common (POLYGONUM HYDROPIPER); Tearthumb (POLYGONUM PERFOLIATUM)
EXPERIMENTAL DOSE: 1.0 kg/ha
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of broadleafs, but not grasses
COMMENTS: Most effective herbicides applied singly were paraquat and 2,4-D; combined herbicide applications (dalapon, paraquat, 2,4-D, Ansar-31, and amitrol) equally or more effective
REFERENCE: Barboa, B.C., "Chemical Control of Weeds in Drains, Drain Sides, and Other Non-Tea Pockets," Two Bud 19(1):25-28 (1972).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Bermudagrass, common (CYNODON DACTYLON); Nutsedge, purple (CYPERUS ROTUNDUS); Three-seeded mercury (ACALYPHA INDICA); (AERVA LANATA); (AGERATUM CONYZOIDES); Senna, coffee- (CASSIA OCCIDENTALIS); Windmill grass (CHLORIS BARBATA); (ECHINOCHLOA COLONUM); Spurge, garden (EUPHORBIA HIRTA); Spurge (EUPHORBIA PROSTRATA); (PHYLLANTHUS NIRURI); Groundcherry (PHYSALIS MINIMA); (RUELLA PROSTRATA); Ironweed (VERNONIA CINEROREA); Indian mallow (ABUTILON INDICUM); (ACHYRANTHES ASPERA); (AMMANNA BACCIFERA); (ASTERACANTHA LONGIFOLIA); Dayflower (COMMELINA BENGHALENSIS); Jews-mallow (CORCHORUS OLITORIUS); Croton (CROTON SPARCIFLORUS); (CYNOTIS AXILLARIS); Yerba de tajo (ECLIPTA ALBA); (GOMPHRENA DECUMBENS); Morningglory (IPOMOEA SEPIARIA); (SPHAERANTHUS INDICUS); (TRIDAX PROCUMBENS)
EXPERIMENTAL DOSE: 2500 and 5000 ppm
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; evaluation time--7 days
EFFECTS: Higher concentration more effective in killing weeds
COMMENTS: Use of herbicides for enhancing crop production has received little attention in India
REFERENCE: Easwaran, K.S.S., "Eradication of Weeds by Bladex G," Agric. Res. 3:96-97 (1971).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Ragwort, marsh (SENECIO AQUATICUS); Clover, white (TRIFOLIUM REPENS)
EXPERIMENTAL DOSE: 1.12 and 1.68 kg/ha
APPLICATION METHODS: Spring applications; 2,4-D ester applied with knapsack sprayer at 225 l./ha
EXPERIMENTAL CONDITIONS: Two applications--April and May; 20 m x 6 m plots; observations made for 2 years, applications made only during first year
EFFECTS: Spraying year--77% ragwort control from April spraying at 1.68 kg/ha and 86% at 1.12 kg/ha, 97% control from May spraying at 1.68 kg/ha and 89% at 1.12 kg/ha; ragwort control better the following year; marked reduction in clover
COMMENTS: Spraying year--May spraying gave better control of ragwort than April spraying; year after spraying--spraying differences disappeared; all treatments gave better control year after spraying
REFERENCE: Forbes, J.C., "Chemical Control of Marsh Ragwort SENECIO-AQUATICUS in Established Grassland," Weed Res. 17(4):247-250 (1977).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Acacia (ACACIA FLAVENSCENS)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 96-152 l./ha; 1.4 kg/sq cm; 0.04% non-ionic wetting agent
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight or no control of ACACIA
COMMENTS: 2,4-D not effective on ACACIA seedlings; addition of 2,4-D to 2,4,5-T gave no better control; picloram no better than 2,4,5-T; significant damage to stylo by all herbicides evaluated
REFERENCE: Bailey, D.R., "Control of ACACIA FLAVESCENS with Herbicides," Aust. J. Exp. Agric. Anim. Husb. 12(5):441-446 (1972).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Kochia (KOCHIA SCOPARIA)
EXPERIMENTAL DOSE: 0.14, 0.28, 0.35, and 0.70 kg/ha; dimethylamine and heptyl amine salts
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Fargo silty clay; time period--1968 to 1970
EFFECTS: Moderate damage to plants beginning flowering and slight damage to plants in full flower; heptylamine salt was more injurious
COMMENTS: Plant size and maturity influenced response of kochia to herbicides, but differences in response among selections could not be explained by variations in size or maturity; all kochia selections were tolerant to picloram
REFERENCE: Bell, A.R., J.D. Nalewaha, and A.B. Schooler, "Response of Kochia Selections to 2,4-D, Dicamba, and Picloram," Weed Sci. 20(5):458-461 (1972).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Plants; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 0.8 kg/ha; G, EC, WP, and WS formulations
APPLICATION METHODS: Postemergence spray or granular applications; butyl ester, isopropyl ester, isobutyl ester, butoxyethanol ester, ethylhexyl ester, oleylpropylenediamine salt, dimethyl amine salt, and sodium salt
EXPERIMENTAL CONDITIONS: Field study; soil--Maahas clay (India); pH--6.0; time period--1968 to 1970
EFFECTS: Of seven 2,4-D formulations, the ethylhexyl ester was most effective; some toxicity to rice occurred, but yield actually increased
COMMENTS: All commonly marketed formulations and derivatives of either MCPA or 2,4-D performed in about the same way and were equally safe for use in controlling barnyardgrass and other annual weeds in transplanted rice; seven-day-old rice seedlings were more susceptible to amine salt of 2,4-D or MCPA than 24-day old seedlings; granular formulations of some chemicals were relatively less toxic than liquid formulations
REFERENCE: De Datta, S.K., R.Q. Lacsina, and D.E. Seaman, "Phenoxy Acid Herbicides for Barnyardgrass Control in Transplanted Grass," Weed Sci. 19(3):203-206 (1973).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Juniper, Savin (JUNIPERUS SABINA); Broadleaf weeds
EXPERIMENTAL DOSE: 1.12 and 3.36 kg/ha; amine and ester
APPLICATION METHODS: Postemergence spray; 187 l./ha; 0.3% X-77 surfactant
EXPERIMENTAL CONDITIONS: Field study; soil--Valentine fine sand; time period--1970 to 1973; multiple and split annual applications
EFFECTS: Effective control of weeds at higher rate after two annual applications; ester formulation generally more effective than amine
COMMENTS: Herbicides most effective for control of broadleaf weeds when applied in 3 consecutive years or in alternate years; herbicides applied only once did not effectively control broadleaf weeds.
REFERENCE: Morrow, L.A. and M.K. McCarty, "Control of Green Sagewort in the Nebraska Sandhills," Weed Sci. 23(6):465-469 (1975).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Canarygrass, reed (PHALARIS ARUNDINACEA); Quackgrass (AGROPYRON REPENS); Bromegrass, smooth (BROMUS INERMIS); Bluegrass, annual (POA ANNUA); Fescue, creeping red (FESTUCA RUBRA); Redtop (AGROSTIS ALBA)
EXPERIMENTAL DOSE: 56.0 kg/ha
APPLICATION METHODS: Postemergence spray; 374 l./ha
EXPERIMENTAL CONDITIONS: Field study; evaluation time--3 mos; weeded manually to produce uniform stands
EFFECTS: Poor control of all grasses except smooth brome and reed canarygrass for which moderate control was obtained
COMMENTS: Amitrole and dalapon combinations more toxic to reed canarygrass, smooth brome, and redtop; pyrichlor toxic to all grasses
REFERENCE: Hodgson, J.M., "Differential Response of Ditchbank Grasses to Herbicides," Weed Sci. 21(5):421-423 (1973).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: (DIGERA ALTERNIFOLIA)
EXPERIMENTAL DOSE: 100 - 2000 ppm
APPLICATION METHODS: Soaking seeds, 6 to 96 hr
EXPERIMENTAL CONDITIONS: Seed placed on filter paper contained in petri plates; temperature 33.5--36.5 C; evaluation time--21 days
EFFECTS: Reduced germination at 500 ppm (6 hr soak) and at 400 ppm after prolonged soaking (24, 48, and 96 hr); enhanced inhibition and mortality occurred in combination with amitrole
COMMENTS: Herbicides may inhibit seed germination and retard seedling growth but not kill plant; longer herbicide contact time suggested
REFERENCE: Dubey, P.S. and L.P. Mall, "Effect of Herbicides on Germination, Viability, and Seed Growth of Weed Seeds. I. DIGERA ALTERNIFOLIA Aschers," Tropical Ecol. 16(1):39-42 (1975).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Bindweed, field (CONVOLVULUS ARVENSIS)
EXPERIMENTAL DOSE: 0.75 lb/A
APPLICATION METHODS: Postemergence spray; 12 gal/A; dimethyl amine salt formulation
EXPERIMENTAL CONDITIONS: Field study; crop rotation; cultivation, and other chemicals were experimental variables
EFFECTS: Effective (90% or more) control of field bindweed achieved in single spring application; fall retreatment necessary for total kill; annual treatment also necessary for continued control; other non-selective herbicides can also be used postharvest but there may be residual effects on subsequent crop plantings
COMMENTS: 2,4-D use alone and in combination with cultivation reduced field bindweed stands 90% or more in three years in variety of crop rotations
REFERENCE: Derscheid, L.A., J.F. Stritzke, and W.G. Wright, "Field Bindweed Control with Cultivation, Cropping, and Chemicals," Weed Sci. 18(5):590-596 (1970).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Horehound (MARRUBIUM VULGARE)
EXPERIMENTAL DOSE: 2.0 and 4.5 lb/A; ester
APPLICATION METHODS: Postemergence spray; 25 gal/A
EXPERIMENTAL CONDITIONS: Field study; evaluation time--2.5 and 12 mos
EFFECTS: Effective control for 12 mos
COMMENTS: Control of horehound plants possible with both 2,4-D and silvex
REFERENCE: Stritzke, J. F., "Germination Characteristics and Chemical Control of Horehound," J. Range Manag. 28(3):225-226 (1975).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1500 ppm
APPLICATION METHODS: Postemergence Spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; evaluation time--up to 16 da at 2-day intervals
EFFECTS: Relatively slight chlorosis (reduced chlorophyll content) of leaves
COMMENTS: Chlorophyll a and b in the foliage of CYPERUS ROTUNDUS rapidly decreased on application of 1500 ppm of herbicides Bladex-O, Embutox-plus, 2,4,-D, and Tok E-25
REFERENCE: Misra, L. P., L. D. Kapoor, and P. S. Choudhri, "Effect of Herbicides on the Chlorophyll Content of Nutgrass (CYPERUS ROTUNDUS L.)" Photosynthetica 8(3):302-303 (1974).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Stinkweed (THLASPI ARVENSE); Thistle, Russian (SALSOLA IBERICA); Lamb's-quarters (CHENOPODIUM ALBUM); Buckwheat, wild (POLYGONUM CONVOLVULUS); Tomato, wild (SOLANUM TRIFLORUM); Pigweed, redroot (AMAPANTHUS RETROFLEXUS); Plants; Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.28 and 0.56 kg/ha; amine, ester, and sodium salt
APPLICATION METHODS: Postemergence spray; 112 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Indian Head clay; time period--1947 to 1972; annual applications
EFFECTS: Moderate to effective control off all weeds at 0.56 kg/ha with no adverse effect on wheat yield except for 2,4-D ester formulation
COMMENTS: Some reductions in grain yields caused by high rates of 2,4-D ester formulations but there was no evidence of any buildup of herbicides or harmful residual effects from treatments; herbicides did not eradicate any of weeds but drastically reduced numbers emerging in crops and on summer fallow
REFERENCE: McCurdy, E.V. and E.S. Molberg, "Effects of the Continuous Use of 2,4-D and MCPA on Spring Wheat Production and Weed Populations," Can. J. Plant Sci. 54:241-245 (1974).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 0.42 to 13.71 g/l.
APPLICATION METHODS: Postemergence spray; varied spray volume
EXPERIMENTAL CONDITIONS: Environmental chamber; continuous light; light intensity--17 X 10(6) lux; temperature--28 to 29 C
EFFECTS: Varied stem curvature depending on concentration, dosage, and/or droplet size
COMMENTS: For same applied dosage, amount of stem curvature increased as droplet-size decreased; when compared with 100-micron droplets, approximately three times and six times as much active ingredient needed to produce the same effect with 200 micron and 400 micron droplets, respectively
REFERENCE: McKinlay, K.S., S.A. Brandt, P.Morse, and R. Ashford, "Droplet Size and Phytotoxicity of Herbicides," Weed Sci. 20(5):450-452 (1972).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Pondweed, sago (POTOMOGETON PECTINATUS); Pondweed, American (POTOMOGETON NODOSUS); Pondweed, curly-leaf (POTOMOGETON CRISPUS); Pondweed (POTOMOGETON PERFOLIATUS); (CHARA VULGARIS); Naiad (NAJAS MINOR); (HYDRILLA VERTICILLATA); Hornwort (CERATOPHYLLUM DEMERSUM); Water celery (VALISNERIA SPIRALIS); Linseed (LINUM USITATISSIMUM); Mustard (BRASSICA CAMPESTRIS); Gram (CICER ARIETINUM); Clover, Egyptian (TRIFOLIUM ALEXANDRINUM); Coriander (CORIANDRUM SATIVUM); Wheat (TRITICUM AESTIVUM); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 168 kg/ha
APPLICATION METHODS: Broadcast; G; into water; dipotassium salt
EXPERIMENTAL CONDITIONS: Application in stagnant and flowing water, stagnant water--pH-7.6, air temp--21 C, water temp--18 C; flowing water--velocity 0.4 km/hr, pH-8.0; air temp--28 C; water temp--22 C; conductivity--0.3 mmhos/cm; evaluation time--one and 8 or 9 wk; treated water used to irrigate crop plots
EFFECTS: Moderate to effective control of water weeds with relatively slow effect; no adverse effect on crop plants
COMMENTS: Of 5 herbicidal treatments employed, chlorothiamid, endothall and 2,4-D killed all submerged water weeds; all crop plants resistant to herbides except gram (susceptible to endothall, dipot.) and rice (susceptible to diuron)
REFERENCE: Dutta, T.R., J. Prasad, and R.P. Singh, "Evaluation of Herbicides for Submerged Weeds in Chambal and Bhakra-Nangal Canal Systems," Indian J. Agric. Sci. 42(1):70-75 (1972).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preplant non-incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: At 1.0 lb/A, effective control of broadleaf and grass weeds (one year) and slight damage to all crop plants in one of two trials
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but

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fairly safe on corn; MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(isopropylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: (RHOEO DISCOLOR); Hyacinth, water (EICHHORNIA CRASSIPES)
EXPERIMENTAL DOSE: 0.001%
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; epidermal cells of leaves studied; cell contents observed microscopically
EFFECTS: Irreversible mitochondrial degeneration
COMMENTS: Plastids treated with 2,4-D disorganized through dispersal of lipids leaving a protein relic as coagulated network; mitochondrial particles respond by extreme vesiculation and enormous swelling accompanied by aggregation; change noted to be irreversible and considered to be produced by dispersal of lipoid micelles from mitochondrial membrane permitting increased intrusion of water
REFERENCE: George, K., "Degeneration of Mitochondria on Herbicidal Treatment," Indian Jour. Exp. Biol. 9:481-484 (1971).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 2.0 kg/ha
APPLICATION METHODS: Postemergence spray application with soil incorporation by rototilling; 335 l/ha
EXPERIMENTAL CONDITIONS: Field application; removal of surviving tubers to greenhouse; evaluation time--6 wk (count of tuber germination)
EFFECTS: Moderately reduced tuber germination
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

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CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.12 and 2.25 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l./ha
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: Chlorosis and necrosis at 10 days and decreased shoot numbers (tuber germination)
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<301>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 2.0 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl-bromide-fumigated soil (Maverly loam); evaluation time--37 and 41 days; tubers recovered and weighed or replanted in vermiculite for further study
EFFECTS: Reduced shoot numbers, weight, and no tuber germination
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<302>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 5% (W/V)
APPLICATION METHODS: Droplet application to shoots (0.5 ml); amine formulation
EXPERIMENTAL CONDITIONS: Pot culture outside; evaluation time--3, 5, and 7 wks; tubers removed and placed in vermiculite for further study
EFFECTS: Reduced tuber numbers and % germination
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<303>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 5.0 and 10.0 ppmw, amine salt
APPLICATION METHODS: Injected under surface of water by spray nozzle at 120 psi
EXPERIMENTAL CONDITIONS: Field study; naiads growing in 2 locations in FL; time period--1960 to 1962
EFFECTS: Effective control of naiad at 10 ppmw for 8 to 12 wk
COMMENTS: Most promising of 13 herbicides for control of southern naiad were acrolein, endothall, diquat, and paraquat; acrolein and endothall gave most rapid kill of southern naiad but retreatment necessary at end of 16 weeks
REFERENCE: Blackburn, R.D. and L.W. Weldon, "Control of Southern Naiad in Florida Drainage and Irrigation Channels," Weeds 12(4):295-298 (1964).

<304>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Doveweed (EREMOCARPUS SETIGERUS)
EXPERIMENTAL DOSE: 2.5 lb/A; ester
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control
COMMENTS: Doveweed relatively resistant to herbicides; most effective treatment in spraying trials was 2,4-D ester; high volume spot spraying gave best results with low volume boom application generally satisfactory, particularly when weeds small
REFERENCE: Meadly, G.R.W., "Doveweed," J. Agr. Western Australia 11(7):149-151 (1970).

<305>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 9.0 kg/ha
APPLICATION METHODS: One-half as preemergence and one-half as postemergence sprays
EXPERIMENTAL CONDITIONS: Field study; wheat cultivation following corn crop harvest
EFFECTS: Increased number and size of vascular bundles resulting increased growth and yield
COMMENTS: Thinner cuticle, vigorous and continuous band of sclerenchymatous cells, greater number with larger diameter of vascular bundles in 2,4-D treated samples seemed to favour better growth of wheat plant; reflected in better yield under 2,4-D than simazine treatments
REFERENCE: Sharma, N.N. and R.K. Roy, "Anatomical Studies on Wheat Plants From Plots Treated With Weedicides," Sci. and Cult. 40(4):161-162 (1974).

<306>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.1 lb/A; acid, diethanolamine, and butoxyethanol ester
APPLICATION METHODS: Postemergence spray; 20, 40, and 60 gal/A at 20, 40, and 60 psi
EXPERIMENTAL CONDITIONS: Field study; volatility and drift studied
EFFECTS: Reduced cotton and soybean yield except 2,4-D dimethylamine formulation did not reduce yield
COMMENTS: PBA, 2,3,6-TBA, and fenac sprays applied safely for eradication of perennial weeds in and near cotton; use of these herbicides near soybeans hazardous because very small quantities caused leaf deformities and some loss in seed yield
REFERENCE: Wiese, A.F. and A.G. Martin, "Toxicity of Benxoic Acid Herbicides to Cotton and Soybeans," Weeds 11(1):7-10 (1963).

<307>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Alfalfa (MEDICAGO SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Millet, foxtail (SETARIA ITALICA); Morningglory, tall (IPOMOEA PURPUREA); Barley (HORDEUM VULGARE); Oat (AVENA SATIVA); Cabbage (BRASSICA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Broadleaf weeds; Pepper (CAPSICUM FRUTESCENS); Foxtail, green (SETARIA VIRIDIS); Grasses
EXPERIMENTAL DOSE: 0.1 to 100 micro M
APPLICATION METHODS: Postemergence spray (assumed)
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as concentration causing 50% inhibition of root and shoot growth
EFFECTS: Generally severe damage to broadleaf weeds and moderate damage to grasses with greater inhibition of roots than shoots
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<308>
<308>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Grape (VITIS VINIFERA)
EXPERIMENTAL DOSE: 100 and 1000 mg/l.
APPLICATION METHODS: Exposed plant roots placed in 1.0 liter herbicide solution; alkanolamine salts and butoxyethanol ester formulations
EXPERIMENTAL CONDITIONS: Pot studies; plastic pot (holes in bottom) with plant placed on top of another pot containing soil; after root growth through holes into second pot, plants carefully removed and placed on top of pot containing herbicide solution; 1-hr herbicide exposure
EFFECTS: Root kill complete at 1000 mg/l., not at 100 mg/l.
COMMENTS: No appreciable difference in formulations; no further testing due to potential hazards to plants other than target species
REFERENCE: Ahrens, J.F., O.A. Leonard, and N.R. Townley, "Chemical Control of Tree Roots in Sewer Lines," J. Water Pollut. Control Fed. 42(9):1643-1655 (1970).

<309>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Chamise (ADENOSTOMA FASCICULATUM); Chamise, redshank (ADENOSTOMA SPARSIFOLIUM)
EXPERIMENTAL DOSE: 4.48 kg/ha
APPLICATION METHODS: Postemergence in 187 l./ha water with nonionic surfactant added; butoxypropyl ester formulation
EXPERIMENTAL CONDITIONS: Five field tests, 4-year period; 30-year old chamise in experiment A, 3 to 4-year old chamise in other tests; randomized block design except experiment C; split-plot design for experiment C, application time as main plot and treatments as subplots, 29.7 m(2) subplot size; plot size for tests A, B, D, E, 40.9 M(2); visual injury evaluation 1 year after treatment, measured evaluation within 15 to 48 months after application
EFFECTS: No control of 30-year old chamise; 23% control of 3 to 4 year old chamise after 21 months; 10% redshank chamise control with spring application
COMMENTS: Foliage injury and canopy reduction also recorded
REFERENCE: Radosevich, S.R., W.L. Graves, and H.A. Agamalian, "Response of Two ADENOSTOMA Species to Several Herbicides," Weed Sci. 25(2):188-192 (1977).

<310>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Elm, American (ULMUS AMERICANA); Oak, overcup (QUERCUS LYRATA); Pecan, bitter (CARYA AQUATICA); Hornbeam, American (CARPINUS CAROLINIANA); Hawthorn (CRATAEGUS MARSHALLII); Privet, swamp (FORESTIERA ACUMINATA); Persimmon, Eastern (DIOSPYROS VIRGINIANA); Ash, green (FRAXINUS PENNSYLVANICA)
EXPERIMENTAL DOSE: 1 and 2 ml
APPLICATION METHODS: Injected applications spaced 23 cm apart, edge to edge; dimethylamine salt of 2,4-D at 479 g/l.
EXPERIMENTAL CONDITIONS: September, December, and June treatments; fine-textured clay soil; each treatment replicated 3 times; random design plots, 10 trees of a species comprised a plot; injections made within 10 cm of groundline; 4:1 mixture of 2,4-D and picloram injected into species resistent to 2,4-D alone (305 g/l.)
EFFECTS: Elm--satisfactory crown kill in all 3 months; oak--satisfactory crown kill in September and December, marginal in June at 2 ml injection, unsatisfactory at 1 ml; pecan--unsatisfactory (1 ml) to marginal (2 ml) crown kill in June, marginal in September, unsatisfactory in December; hornbeam--unsatisfactory (1 ml) to satisfactory (2 ml) in June, satisfactory crown kill in September, unsatisfactory in December; hawthorn--unsatisfactory crown kill in June, marginal (1 ml) to satisfactory (2 ml) in September, satisfactory in December; privet--unsatisfactory (1 ml) in June and December, marginal (1 ml) crown kill in September; persimmon--satisfactory (1 ml) in June only; ash--satisfactory (1 ml) in all 3 months
COMMENTS: Crown kill ratings--satisfactory (91 to 100%), marginal (85 to 90%), and unsatisfactory (below 85%); 2,4-D plus picloram generally gave better crown kill than 2,4-D alone
REFERENCE: Peevy, F.A., "Injection Treatments for Killing Bottom-Land Hardwoods," Weed Sci. 20(6):566-568 (1972).

<311>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Crabgrass, large (DIGITARIA SANGUINALIS); Wiregrass (ELEUSINE INDICA); Goosegrass (ELEUSINE AEGYPTICA); Love-grass (ERAGROSTIS MAJOR); (PANICUM TEXANUM); Bermudagrass, common (CYNODON DACTYLON); (FIMBRISTYLIS MILIACEA); Nutsedge, purple (CYPERUS ROTUNDUS); Galingale (CYPERUS IRIA); Sensitive-plant (MIMOSA PUDICA); Weeds; Amaranth (AMARANTHUS VIRIDIS); (ACHYRANTHES ASPERA); (CLEOSIA ARGENTIA); Croton (CROTON SPARCIFLORUS); Dayflower (COMMELINA BENGHALENSIS); Spurge, garden (EUPHORBIA HIRTA); Indigo (INDIOFERA CORDIFOLIA); Groundcherry (PHYSALIS MINIMA); Morningglory (IPOMOEA OBSCURA); (SIDA RHOMBIFOLIA)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Preemergence followed by postemergence treatment at same rate
EXPERIMENTAL CONDITIONS: Field experiments; main crop and ratoon crop; 1.6 X 6.4 plots; unweeded control and hoed control (3 hoeings)
EFFECTS: No effect on bud germination or shoot regeneration in ratoon crop; number of millable cane increased over unweeded control and hoed control; good weed control
COMMENTS: Ratoon crop--sprouts emerging from harvested crop; no reported sugarcane injury; effects on specific weeds not given
REFERENCE: Patro, G.K. and G.C. Tosh, "Effect of Different Herbicides on Weeds and Yield of Sugarcane," Andhra Agric. J. 18(5):185-188 (1971).

<312>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Hyacinth, water (EICHHORNIA HASTAEFOLIA)
EXPERIMENTAL DOSE: 2.8 kg/ha
APPLICATION METHODS: Addition to water
EXPERIMENTAL CONDITIONS: Field study; evaluation time--2 and 6 wk
EFFECTS: Moderate control
COMMENTS: Complete control of water hyacinth obtained with diquat and paraquat with no further regeneration; partial control obtained with cyanazine and 2,4-D while TCA proved non-effective against water hyacinth
REFERENCE: Patro, G.K. and G.C. Tosh, "Studies on Control of Water Hyacinth (EICHHORNIA CRASSIPES) by Herbicides," Andhra Agric. J. 18(4):139-143 (1971).

<313>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 500 micro M
APPLICATION METHODS: Addition to assay preparations of chloroplasts
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: No photochemical or photobleaching effects noted
COMMENTS: Dual wavelength spectrophotometry applied to observations of small spectral changes during biochemical reactions in intact tissue; based on principle that absorbance reading at wavelength of isobestic point of reaction fluctuates with time in same manner as reading at wavelength where an absorbance change due to reaction takes place
REFERENCE: Inoue, Y., Yaginuma, N., Ogawa, T., Konishi, K., and K. Shibata, "Spectral Changes of Chloroplasts as a Means to Examine Phytotoxic Effects of Herbicides," in Environmental Toxicology of Pesticides, F. Matsumura, G.M. Boush, and T. Misato (Eds.) Academic Press, New York and London, pp. 549-570 (1972).

<314>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Waterweed (ELODEA CANADENSIS); Naiad, Southern (NAJAS GUADALUPENSIS); Coontail (CERATOPHYLLUM DEMERSUM); Lettuce, water (PISTIA STRATIOTES); Hyacinth, water (EICHHORNIA HASTAEFOLIA); Salvinia (SALVINIA ROTUNDIFOLIA); Alligatorweed
EXPERIMENTAL DOSE: 1.0 to 20.0 lb/A; ester and amine salts
APPLICATION METHODS: Addition by syringe to water containing test species (submersed species) and spray (100 gal/A at 20 psi)
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--80 F; light intensity--60 to 80 ft c; photoperiod--10 hr; evaluation time--2 to 8 wk with continuous and varied (0.5 to 336 hr) contact
EFFECTS: At 5.0 to 20.0 rates, moderate to effective weed control for 8 wk; amine more active than ester
COMMENTS: Among 75 herbicides evaluated on three species of submersed weeds only diquat, endothal, and acrolein gave 85% or better control at 1 ppmw in still-water tests; only acrolein and endothal effective on submersed weeds at 1 ppmw in limited-exposure test; evaluation of 17 herbicides on three species of floating aquatic weeds indicated diquat effective
REFERENCE: Blackburn, R.D., "Evaluating Herbicides Against Aquatic Weeds," Weeds 11(1):21-24 (1963).

<315>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 2.0 to 10.0 lb/A; ethyl and butyl esters and amine formulations
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Effective eradication at 6.5 lb/A of butyl ester formulation
COMMENTS: B. VERTICILLATA Never killed by selective rates of fenac, but not by selective rates of nine of most phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<316>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Rabbitbrush, green (CHRYSOTHAMNUS VISICIDIFLORUS); Rabbitbrush, grey (CHRYSOTHAMNUS NAUSEOSUS); Sagebrush, big (ARTEMISIA TRIDENTATA)
EXPERIMENTAL DOSE: 1.0 to 4.0 lb/A; butoxyethanol
APPLICATION METHODS: Foliar spray; 30 psi; 5.0 to 10.0 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1950 to 1955
EFFECTS: At 3.0 lb/A; effective control of gray rabbitbrush, moderate control of green rabbitbrush, and control of sagebrush if timed correctly
COMMENTS: Green and grey rabbitbrush more susceptible to 2,4-D esters than to any of other herbicides used; with 2,4-D esters, an acid equivalent rate of 3 lb/A gave good rabbitbrush control
REFERENCE: Hyder, D.N., F.A. Sneva, D.O. Chilcote, and W.R. Furtick, "Chemical Control of Rabbitbrush with Emphasis Upon Simultaneous Control of Big Sagebrush," Weeds 6(3):289-297 (1958).

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<317>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: Effective initial control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<318>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Corn (ZEA MAYS); Nutsedge, yellow (CYPERUS ESCULENTUS); Foxtail, giant (SETARIA FABERI); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Mattapex silt loam; time period--1974 and 1975
EFFECTS: Moderate weed control with no adverse effect on corn
COMMENTS: Best control of weed species achieved with combination of materials; only RP-20630 and RP-15018, at high rates, caused corn injury and reduced yields
REFERENCE: Parochetti, J.V., G.W. Burt, and A.W. Bell, "Triazines, Acetanilides, and Several Other Herbicides for Weed Control in Corn," Proc. N.E. Weed Sci. Soc. 30:48-54 (1976).

<319>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Spurrey, corn (SPERGULA ARVENSIS); Sorrel, wood (OXALIS LATIFOLIA)
EXPERIMENTAL DOSE: 5.0 lb/A; sodium salt and butyl ester
APPLICATION METHODS: Foliar spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight control of spurry and moderate control of OXALIS; butyl ester less effective than sodium salt
COMMENTS: Extar A and Triherbide NIX proved definitely better than others on SPERGULA ARVENSIS; were quick in action, while MCPA and mixture of sodium 2,4-D proved ineffective against this weed
REFERENCE: Narayanan, T.R. and D. Meenakshisundaram, "Studies on the Relative Efficacies of a Few Chemical Herbicides in the Control of SPERGULA ARVENSIS, L. and OXALIS LATIFOLIA HBK., Two Important Weeds of the Nilgiris," Madras Agric. J. 45(1):1-6 (1958).

<320>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Crabgrass (DIGITARIA sp.);Broadleaf weeds; Gladiolus
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Basal postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--sandy clay loam
EFFECTS: Growth reduction of crabgrass and effective control of broadleaf weeds with no adverse effect on gladiolus
COMMENTS: Potassium cyanate and PMAS applied as postemergence soil treatments, gave promising control of crabgrass and certain broad-leaved weeds without injury to gladiolus
REFERENCE: Gianfagna, A.J., "Gladiolus Weed Control," N.Y. State Flower Growers Bull. 43:2-3 (1949).

<321>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Ragwort (SENECIO JACOBEA); Ragwort, marsh (SENECIO AQUATICUS)
EXPERIMENTAL DOSE: 1.68 kg/ha
APPLICATION METHODS: Postemergence spray; 220 l./ha; applied at rosette or flowering stages
EXPERIMENTAL CONDITIONS: Field study; established grasslands
EFFECTS: Moderate control of ragworts
COMMENTS: MCPA equally effective in preventing flowering in year of spraying of both SENECIO JACOBAEA and S. AQUATICUS if applied at rosette stage in mid May; 2,4-D ester gave significantly better control of both flowering plants and first year plants of S. JACOBAEA in year of spraying than MCPA
REFERENCE: Forbes, J.C., "Spraying and Cutting Experiments on Ragwort (SENECIO JACOBAEA L. and S. AQUATIOUS HILL)," Proc. 12th. Br. Weed Cont. Conf. 2:743-750 (1974).

<322>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 10.0 mg/l., amine
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Reduced sprouting at lower dip rate

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COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<323>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,-D
PLANT: Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1.5 l./ha; U 46 M Fluid; dimethyl amine
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field/greenhouse study; field herbicide application and seed collecting; greenhouse pot culture for seed viability; annual applications for 12 yr; abnormal plants produced from some viable seed
EFFECTS: Reduced weed seed survival and abnormal plants from surviving seed
COMMENTS: Reduction in total weed seeds by different control measures was: DNOC greater than 2,4-D greater than calcium cyanamide greater than MCPA greater than "rotation" greater than harrow; rotation was a rotation of MCPA, DNOC, calcium cyanamide, and harrowing
REFERENCE: Hurle, K., "Effect on Long-Term Weed Control Measures on Viable Weed Seeds in the Soil," Proc. 12th Brit. Weed Contr. Conf. 12(3):1145-1152 (1974).

<324>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 40 mg of lanolin preparation (1% experimental compound)
APPLICATION METHODS: Applied directly to primary leaf pulvinus
EXPERIMENTAL CONDITIONS: Not given
COMMENTS: 4-chlorophenoxyacetic acid very active as was 4-chlorophenyl ester; slight effect noted within two days after application; within ten days stems badly swollen and trifoliate leaves dwarfed
REFERENCE: Kalinowski, M.L. and L.W. Kalinowski, "Cyclization of Phenoxyacetic Acid and Some Chlorophenoxyacetic Acids," J. Chem. Soc. 70:1970-1971 (1948).

<325>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Corn (ZEA MAYS); Grasses
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: Postemergence spray; 3 single applications at varied growth stages; 25 or 40 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of broadleaf weeds, moderate control of grass weeds, and slight leaf damage of corn
COMMENTS: When sprayed on asparagus planting before, during, and after cutting season, controlled weeds effectively without affecting quality or yield of spears; in plantings of sweet and field corn, best control of weeds obtained when germination of weeds occurred over period of several days
REFERENCE: Finn, T.P. and L.J. King, "Weed Control Studies With Experimental Herbicide 1 at Seabrook Farms, Bridgeton, N.J." Proc. N.E. Weed Cont. 5:Conf. 81-86 (1951).

<326>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Hyacinth, water (EICHHORNIA HASTAEFOLIA)
EXPERIMENTAL DOSE: 0.1 to 100.0 ppm
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Death within 10 days at 0.1 ppm
COMMENTS: Responses recorded for plants subjected to treatment with vapors or with aqueous sprays; epinasty and curvatures, browning, root-abcission and death; all plants in tapwater containing any of formagenic substances began to brown immediately and died within 48 hours
REFERENCE: King, G.S., "Some Responses of Water Hyacinth to Formagens," La. Acad. Sci. Proc. 10:35-41 (1947).

<327>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Clover, white (TRIFOLIUM REPENS); Chickweed, mouse-ear (CERASTIUM VISCOSUM); Dandelion, common (TARAXACUM OFFICINALE)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: Foliar spray; 50 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1974 and 1975; soil--Bridgehampton silt loam
EFFECTS: Moderate control of clover and dandelion with slight control of chickweed
COMMENTS: Variable control of dandelion observed with all applications of 2,4-D; combinations of 2,4-D with one or more herbicides -- dicamba, mecoprop or silvex -- provided good broad spectrum control and in certain cases greater than 90 percent control; a newer material RO-7-6145 gave good control of chickweed and dandelion; PP-831 provided better than 90 percent control of clover and chickweed
REFERENCE: Jagschitz, J.A. and L.H. Barrett, "Chemical Control of Broadleaved Weeds in Cool Season Turfgrasses," Proc. N.E. Weed Sci. Soc. 30:385-388 (1976).

<328>
<328>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Hyacinth, water (EICHHORNIA HASTAEFOLIA)
EXPERIMENTAL DOSE: 0.5%; 4 ml/8 sq ft
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Severe leaf damage but recovery of plants as evidenced by new buds within 5 days
COMMENTS: Sodium salt MCIP more toxic than free acid; toxic effect lessened with time; leaves of water-hyacinth more susceptible to inhibitory action of MCIP than petioles
REFERENCE: Ghosh, A.C. and J.K. Chowdhury, "Control of Water-Hyacinth by 2-Methyl 4-Chloro 5-Isopropyl Phenoxyacetic Acid (MCIP) - A Contact Herbicide," Rose Res. Inst. Calcutta 19:1-8 (1953).

<329>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Mesquite, honey (PROSOPIS JULIFLORA); Rose, Macartney (ROSA BRACTEATA); Oak, live (QUERCUS VIRGINIANA); Huisache (ACACIA FARNESIANA); Whitebrush (ALOYSIA LYCIOIDES)
EXPERIMENTAL DOSE: 0.56 and 2.24 kg/ha
APPLICATION METHODS: Postemergence sprays for brush control; granular herbicides spread by hand broadcasting, liquid herbicides sprayed at volume of 187 l./ha in acetone or water; polymerized herbicides sprayed in acetone (spring) and water (fall)
EXPERIMENTAL CONDITIONS: Field study; native stand and nursery grown brush plants; three replicates per treatment; randomized block experimental design
EFFECTS: Slight control of all test species except honey mesquite for which moderate control was obtained
COMMENTS: Generally no significant differences in effectiveness between conventional and polymerized herbicides on honey mesquite
REFERENCE: Bovey, R.W., R.E. Meyer, R.D. Baker, and J.R. Baur, "Polymerized Herbicides for Brush Control," Weed Sci. 20(4):332-335 (1972).

<330>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Bahiagrass (PASPALUM NOTATUM); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Up to 3.0 lb/A
APPLICATION METHODS: Foliar spray; 20 to 36.6 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; soils--Lakeland fine and coarse sand and Kanapaha fine sand; results in greenhouse and field similar; time period--1956 and 1957
EFFECTS: No or slight damage of mature bahiagrass with effective weed control thus allowing turf establishment
COMMENTS: Oil soluble 2,3,6-TBA killed all bahiagrass seedlings under greenhouse conditions; same treatments, applied to seedlings in field, killed a high percentage but not all plants; carrier consisting partially or entirely of diesel oil for other herbicidl treatments caused more severe damage to seedlings than water carrier for comparable treatments
REFERENCE: Black, C.C. and E.G. Rodgers, "Response of Pensacola Bahiagrass to Herbicides," Weeds 8(1):72-77 (1960).

<331>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Mustard, white (SINAPIS ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 4.0 kg/ha; WP; 25% active compound; 5% lye, 5% Emmulat P-141, and 65% kaolin
APPLICATION METHODS: Pre- and postemergence applications; method not specified
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Total kill in both applications
COMMENTS: Synthesized 3,4-dichloroanilides had no or little herbicidal activity, as compared with high activity of known herbicides, 3,4-dichloropropionanilide and 2,4-dichlorophenoxyacetic acid; introduction of phenoxy groupings into acid moiety of active fatty acid-3,4-dichloroanilides as well as introduction of 3,4-dichloroaniline group into carboxylic group of active phenoxyacetic acids decreased herbicidal activity
REFERENCE: Matolcsy, G. and M. Hamran, "The Herbicidal Effect on Some Substituted Anilides," Weed Res. 4(2):118-122 (1963).

<332>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: (LEUCAENA LEUCOCEPHALA)
EXPERIMENTAL DOSE: 8.0 kg/ha
APPLICATION METHODS: Soil addition; postemergence spray (charcoal study)
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Reduced yield of LEUCANA; charcoal protected plants
COMMENTS: DCPA applied at pre-emergent rates reduced leucaena yield, plant height and root length; highest rate, yield only 2 per cent of control yields; severe tap root damage noted; trifluralin as a pre-emergent spray controlled crowsfoot at all rates but resulted in linear reduction in leucaena yield with increasing herbicide rate
REFERENCE: Jones, R.J. and A.S. Aliynt, "The Effect of ELEUSINE INDICA, Herbicides on the Seedling Growth of LEUCAENA LEUCOCEPHALA cv. Peru," Trop. Grassl. 10(3):195-203 (1976).

<333>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.25 and 0.50 lb/A
APPLICATION METHODS: Postemergence spray; 10 to 25 gal/A
EXPERIMENTAL CONDITIONS: Field study; 4 locations in ND, SD, and MN
EFFECTS: Effective control of broadleaf weeds and no control of foxtail with no adverse effect on wheat
COMMENTS: Penoxalin preemergence or lightly incorporated treatment after seeding wheat gave excellent annual weed control and demonstrated good selectivity; penoxalin also demonstrated good to excellent weed control in potatoes either as preemergence or dragoff treatment; penoxalin treatments produced good yields in both crops
REFERENCE: Jorgenson, E.M., C.R. Wingfield, and G.I. Nzewi, "Use of Penoxalin Herbicide for Weed Control in Spring Grains and Potatoes," Proc. North Cent. Weed Cont. Conf. 30:72-74 (1975).

<334>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Primrose, water (JUSSIAEA sp.)
EXPERIMENTAL DOSE: 2.0, 4.0, and 6.0 lb/100 gal; 0.02% liquid Lux
APPLICATION METHODS: Spray to wet above-water portions of plant
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control at 30 days
COMMENTS: Little difference between chemicals after 11 days; all treatments gave complete kill by 30 days after spraying
REFERENCE: Hardcastle, W.S. and J.T. Davis, "The Control of Water-Primrose in Quiescent Waters," Proc. S. Weed Conf. 12:152-153 (1959).

<335>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 5.21 to 4.45 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<336>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Slight control of nutsedge; damage to bluegrass sod
COMMENTS: Promising results with BAS-3510, BAS-3516; DSMA; MBR-8251, and S-21634; some turf injury noted for 2,4-D, MBR-8251, and S-21634
REFERENCE: Jagschitz, J.A., "Evaluation of Herbicides for Nutsedge Control in Turfgrass," Proc. Northeast. Weed Sci. Soc. 27:331-333 (1973).

<337>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)- alkanolamine salt
CHEMICAL COMMON NAME: 2,4-D, alkanolamine salt
PLANT: Witchweed (STRIGA ASIATICA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3, 4, 6, 8, and 12 lb/A
APPLICATION METHODS: Preplanting incorporated treatments
EXPERIMENTAL CONDITIONS: 1958 experiment--12 by 40 ft plots, corn planted 7 days after treatment, randomized block design with 4 replications; 1959 experiment--randomized block design with 3 replications, corn planted 5, 10, and 20 days after treatment; soil--Lakeland sand
EFFECTS: 1958--effective witchweed control at 3, 6, and 12 lb/A; 1959--effective witchweed control at 4, 8, and 12 lb/A, little or no effect on corn stands
COMMENTS: Degree of witchweed control based on corn yield
REFERENCE: Robinson, E.L., Soil-incorporated Pre-planting Herbicides for Witchweed Control," Weeds 9(3):411-415 (1961).

<338>
<338>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-, ammonium salt
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g per sq yd in 50 ml of solution (aqueous); soil application; 0.1 g per sq yd in 5 ml of solution (oil based); at 8, 24, & 40 mg/pot
APPLICATION METHODS: Aqueous & oil sprays in spray chambers; field studies utilized modified De Vilbiss type CV paint sprayer; soil applications also
EXPERIMENTAL CONDITIONS: In pots in greenhouse; in fields of fertilized silt loam; rows 3 ft apart, plants at 1 ft intervals; soil contamination study--pots used with no contact with vegetative plant parts
EFFECTS: No significant effect with aqueous spray; reduced yield with oil spray application and soil application
COMMENTS: Chemical appears satisfactory for broadleaf weed control without significant yield loses when applied aqueously
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<339>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-, butyl ester
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 5 ml of oil solution
APPLICATION METHODS: Spray in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: No significant effects
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<340>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-, sodium salt
CHEMICAL COMMON NAME: Fernoxone
PLANT: Bindweed, field (CONVOLVULUS ARVENSIS); Goosefoot (CHENOPODIUM sp.); Mustard (BRASSICA sp.); Clover, Egyptian (TRIFOLIUM ALEXANDRIANUM); (CRESSA CRETICA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Post-sowing treatments
EXPERIMENTAL CONDITIONS: 2 post-sowing experiments; experiment 1--sprayed on 3-and 8-week old wheat plants, randomized block design with 4 replications, 1/8 acre plots; experiment 2--more elaborate field trial than above, split plot design with 3 replications, application times were main plots, herbicide treatments were subplots of 1/8 acre each
EFFECTS: Experiment 1--effective against all weeds except C. CRETICA and C. ROTUNDUS; experiment 2--weed population significantly reduced by application, later increased but still lower at harvest than untreated check, the later the application after sowing the better the weed control at harvest; no deleterious effect on wheat seedlings
COMMENTS: Greater yield when sprayed at 6 to 8 weeks after sowing in comparison with 3 weeks after sowing; the herbicide legumex less effective than other tested herbicides; phenoxylene the safest herbicide tested
REFERENCE: Kausar, A.G. and A. Ghaffer, "Trials of Selective Herbicides for Weed Control in Wheat," Pak. J. Bot. 7(2):149-159 (1975).

<341>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-, 2-butoxyethyl ester
CHEMICAL COMMON NAME: Bladex-B
PLANT: Sorghum (SORGHUM BICOLOR); Plants
EXPERIMENTAL DOSE: 5 l/ha
APPLICATION METHODS: Preemergence treatments as spray in 1000 l. water
EXPERIMENTAL CONDITIONS: Rain-fed conditions, light black soil; 4 replications, randomized block design with plot size 610 cm x 458 cm
EFFECTS: Destroyed all but 11% of sorghum stand; weed population also controlled
COMMENTS: Simazine and atrazine more effective in weed control and grain yield than other herbicides tested; combination of simazine (1.25 kg/ha) preemergence plus 2,4-D (1 kg/ha) postemergence also gave good weed control and grain yield
REFERENCE: Krishnamurthy, K., "Effect of Herbicides on Weeds and Yield of Sorghum," Indian J. Agric. Sci. 40(5):474-480 (1970).

<342>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)-, 2,4-dichlorophenyl ester
PLANT: Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 40 mg of lanolin preparation (1% experimental compound)
APPLICATION METHODS: Applied directly to primary leaf pulvinus
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Trifoliate leave dwarfed
COMMENTS: 4-chlorophenoxyacetic acid very active as was 4-chlorophenyl ester; slight effect noted within two days after application; within ten days stems badly swollen and trifoliate leaves dwarfed
REFERENCE: Kalinowski, M.L. and L.W. Kalinowski, "Cyclization of Phenoxyacetic Acid and Some Chlorophenoxyacetic Acids," J. Chem. Soc. 70:1970-1971 (1948).

<343>
CHEMICAL NAME: Acetic acid, (2,4-dichlorophenoxy)thio-
CHEMICAL COMMON NAME: Thio-2,4-D
PLANT: Linseed (LINUM USITATISSIMUM); Wheat (TRITICUM AESTIVUM); Cress (BARBAREA sp.); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 5X10(-6) to 1X10(-2)M
APPLICATION METHODS: Postemergence spray (plants removed from culture solution); dipping intact plants in solutions (2 hr); addition to culture solution in small amounts
EXPERIMENTAL CONDITIONS: Laboratory study; hydroponically cultured test plants; artificial light; temperature--22 C
EFFECTS: Reduced growth of all test plants with death or varied abnormalities; stimulated pea at low concentration; generally more active on flax, cress, and peas than 2,4-D but less active on wheat
COMMENTS: Specificity of the thio compounds differs from acetic acids; thio-2,4-D less active on wheat but more active on cress and peas; thio-2,4,5-T decidedly more active on wheat but probably less on peas
REFERENCE: Burstrom, H., B. Sjoberg, and B. A. M. Hansen, "The Plant Growth Activity of Phenoxythioacetic Acids," Acta Agric. Scand. 6:155-177 (1956).

<344>
CHEMICAL NAME: Acetic acid, (2,4-dimethylphenoxy)-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<345>
CHEMICAL NAME: Acetic acid, (2,4-dinitrophenoxy)-, sodium salt
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Some inhibition of charlock germination (percent inhibition not given); little or no effect on oat growth or germination
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<346>
CHEMICAL NAME: Acetic acid, (2,4,5 trichlorophenoxy)-, potassium salt
PLANT: Hyacinth, water (EICHHORNIA HASTAEFOLIA)
EXPERIMENTAL DOSE: 0.1 to 100.0 ppm
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Death within 14 days at 0.1 ppm
COMMENTS: Responses recorded for plants subjected to treatment with vapors or with aqueous sprays; epinasty and curvatures, browning, root-abcission and death; all plants in tapwater containing any of formagenic substances began to brown immediately and died within 48 hours
REFERENCE: King, G.S., "Some Responses of Water Hyacinth to Formagens," La. Acad. Sci. Proc. 10:35-41 (1947).

<347>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Plants
EXPERIMENTAL DOSE: 12.0 lbs/24 gal/A; 12.0 lbs/48 gal/A
APPLICATION METHODS: Postemergence application; fuel oil carrier, Microfoil boom; 12-48 gal/A oil; 35 psi
EXPERIMENTAL CONDITIONS: Field study; dormant season
EFFECTS: Moderate eradication of brush
COMMENTS: On basis of effectiveness, several combined mixes of herbicides appear about as effective as 2,4,5-T in brush eradication despite considerable variation in effects
REFERENCE: Chappell, W.E., "Herbicidal Mixtures for the Control of Mixed Brush in Right-of-Way," Proc. South. Weed Sci. Soc. 26:306-309 (1973).

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<348>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Larkspur (DELPHINIUM BARBEYI)
EXPERIMENTAL DOSE: 0.375 to 3.0 lb/A
APPLICATION METHODS: Individual application to base of plant and as sprays at prebloom, flowering, and seed stages of plant development
EXPERIMENTAL CONDITIONS: Field study; applied in conjunction with urea or ammonium sulfate; evaluation--1,2, or 10-12 yr
EFFECTS: Effective control of larkspur at all 2,4,5-T applications 10 yr after treatment; 2,4,5-T also effective after one or two years in conjunction with 2,4-D or ammonium sulfate but not when applied with urea
COMMENTS: Larkspur poisonous to cattle; nitrogen in urea and ammonium sulfate alone or in combination with herbicides effectively controlled larkspur 10 yr after application; 2,4-D and 2,4,5-T combined treatment also effective; fenuron and DB granular (sodium tetraborate) effective for one year only
REFERENCE: Binns, W., L.F. James, and A.E. Johnson, "Control of Larkspur with Herbicides Plus Nitrogen Fertilizer," J. of Range Manage. 24(2):110-113 (1971).

<349>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1x 10(-4), 1x 10(-6), and 1x 10(-8)m
APPLICATION METHODS: Herbicide incorporation in tissue culture agar nutrient medium
EXPERIMENTAL CONDITIONS: Laboratory study; tissue culture; tissue source--soybean cotyledons; herbicides incorporated into nutrient growth medium; temperature--30 C; incubation time--15 days
EFFECTS: Reduction in tissue growth at 10(-4) and 10 (-6)M but significant stimulation of growth at 10(-8)M; similar results when 2,4,5-T combined in equimolar solutions with dicamba and picloram except that very significant increased growth occurred with 2,4,5-T and picloram at 10(-8) M
COMMENTS: Combinations of 2,4,5-T, dicamba, or picloram not more phytotoxic than each herbicide applied alone; similar mechanisms of action postulated
REFERENCE: Bovey, R.W., J.R. Baur, and J.D. Diaz-Colon, "Phytotoxicity of 2,4,5-T, Picloram, and Dicamba, Alone and in Mixtures in Tissue Culture," Weed Sci. 22(2):191-192 (1974).

<350>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Mesquite, honey (PROSOPIS JULIFLORA); Mesquite, velvet (PROSOPIS JULIFLORA)
EXPERIMENTAL DOSE: 1000 ppmw; 20 Microliter/leaf
APPLICATION METHODS: Applied as droplets to leaves; surfactant at 0.5% (v/v); DSMO was an experimental variable
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Severe contact injury and other phytotoxic effects observed on both mesquites; combined 2,4,5-T and picloram produced about the same damage
COMMENTS: Formulation of herbicides in a DMSO-complex carrier enhanced activity considerably over that obtained with aqueous carrier, the degree of enhancement being greater with 2,4,5-T than with picloram
REFERENCE: Hull, H.H. and H.L. Morton, "Morphological Response of Two Mesquite Varieties to 2,4,5-T and Picloram," Weed Sci. 19(6):712-716 (1971).

<351>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 0.1% of MW of DCPA
APPLICATION METHODS: Postemergence spray; infield--100 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study (bean and flax), soil--Dickson grey-brown clay; field study (wheat and barley), soil--Dickson grey-brown clay
EFFECTS: Reduced bean yield
COMMENTS: Wheat exhibited differential responses to phenoxyacetic acid compounds and isopropyl phenylcarbamate at different growth stages; applications of four phenoxyacetic acid compounds to wheat at different stages of development, from late seedling to flowering, showed grain yields reduced most markedly by applications in seedling stage; isopropyl phenylcarbamate had no effect on wheat in late seedling or tillering stages, but severely depressed yield of grain when applied at flowering; barley responded similarly; higher concentrations applied to wheat at pre-shooting also reduced grain yields
REFERENCE: Moore, R.M., "Differential Effects of Certain Phenoxyacetic Acid Compounds and Phenylcarbamates on Plant Species," Austral. J. Agric. Res. 1:401-412 (1950)

<352>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Pea, scurf (PSORALEA CORYLIFORA)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Solutions applied to seed
EXPERIMENTAL CONDITIONS: Environmental chamber; seed germination in petri plates with filter paper; temperature--35 C; continuous light; scarification by abrasion and chemically; soaking in test solutions for 8 hr
EFFECTS: Reduced germination (at least 50%) at concentrations of 50 ppm and higher; 8 hr soak of scarified seed

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COMMENTS: Inhibition of germination of acid-scarified pods increased with increase in concentration; inhibition irreversible and led to death of seed in pod; mortality, expressed as percentage of dead pods, highest for 2,4,5-T and IAA and lowest for GA.
REFERENCE: Shukla, S.P., "The Effects of Some Chemicals on the Germination of a Weed, PSORALEA CORYLIFOLIA L.," Weed Res. 12(4):293-300 (1972).

<353>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Rice (LEERSIA ORYZOIDES); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1 kg/ha
APPLICATION METHODS: Treatment 21 days after seeding; knapsack spray application at 670 dm(3)/ha
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; 3 x 5 m plots; visual toxicity and weed control ratings
EFFECTS: No toxicity to rice but very little nutsedge control
COMMENTS: Propanil/2,4,5-T mixtures more effective than single herbicides but rice toxicity increased
REFERENCE: Aryeetey, A.N., "Chemical Weed Control in Rice in Ghana," Ghana J. Agric. Sci. 6:199-204 (1973).

<354>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 20 lb/A
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Field study; leaching and degradation experiments over time periods up to 3 mo
EFFECTS: Inhibited germination of soybeans planted 90 da after initial application
COMMENTS: 2,4-D and IPC when applied in excessive amounts, readily leached from soil; when leaching prevented, former compound inactivated; 2-methyl-4-chlorophenoxyacetic acid and 2,4,5-trichlorophenoxyacetic acid much more persistent, and herbicidally active for longer period of time than 2,4-D
REFERENCE: DeRose, H. R., "Persistence of Some Plant Growth-Regulators When Applied to the Soil in Herbicidal Treatments," Bot. Gaz. 106:583-589 (1946).

<355>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Linseed (LINUM USITATISSIMUM); Wheat (TRITICUM AESTIVUM); Cress (BARBAREA sp.); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 5X10(-6) to 1X10(-2) M
APPLICATION METHODS: Postemergence spray (plants removed from culture solution); dipping intact plants in solutions (2 hr); addition to culture solution in small amounts
EXPERIMENTAL CONDITIONS: Laboratory study; hydroponically cultured test plants; artificial light; temperature--22 C
EFFECTS: Growth reduction and growth malformation; pea stimulated at low concentration
COMMENTS: Specificity of the thio compounds differs from acetic acids; thio-2,4-D less active on wheat but more active on cress and peas; thio-2,4,5-T decidedly more active on wheat but probably less on peas; less active than thio-1,4,5-T on all test species
REFERENCE: Burstrom, H., B. Sjoberg, and B. A. M. Hansen, "The Plant Growth Activity of Phenoxythioacetic Acids," Acta Agric. Scand. 6:155-177 (1956).

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CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Oak Gambel (Quercus sp.); Serviceberry, Saskatoon (AMELANCHIER ALNIFLORA); Snowberry, roundleaf (SYMPHORICARPUS ROTUNDIFOLIUS); Squaw-apple (PERAPHYLLUM RAMOSISSIMUM); Sagebrush, big (ARTEMISIA TRIDENTATA)
EXPERIMENTAL DOSE: 2.2 lb/A; diesel oil diluent
APPLICATION METHODS: Aerial spray to foliage; 5.5 l./ha; repeat applications after 2 or 3 yr
EXPERIMENTAL CONDITIONS: Field study; time period -- 1968 to 1972; 2 locations in Colorado; brush control
EFFECTS: Mostly moderate to effective brush control (canopy reduction)
COMMENTS: July application superior to August application; repeat sprays after two years better than after three years; all herbicides gave similar control of Gambel oak, but silvex and dichlorprop less effective on Saskatoon serviceberry, roundleaf snowberry, and squaw-apple than 2,4,5-T or a mixture of 2,4-D and dichlorprop
REFERENCE: Johnson, R.R., "Improving Forage Production and Big Game Winter Range With Phenoxy Herbicides," Proc. West. Soc. Weed Sci. 28:40-43 (1975).

<357>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Couchgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2) M, 10(-3), and 10(-4) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days

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<357> CONT.
EFFECTS: Effective control of shoot emergence at 10(-3) M; moderate control at 10(-4) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<358>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Orchard grass (DACTYLIS GLOMERATA); Fescue, creeping red (FESTUCA RUBRA); Timothy (PHLEUM PRATENSE); Bentgrass (AGROSTIS sp.); Plants
EXPERIMENTAL DOSE: 2.0 lb/A; ester
APPLICATION METHODS: Postemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Puget silt loam
EFFECTS: Effective control of weeds with no adverse effect on turf grasses
COMMENTS: Orchardgrass seed yields, significantly decreased by 2,4-D (acid) and silvex (yields from these plots did not differ significantly); silvex and 2,4,5-T ester applications in red fescue plantings significantly decreased seed yield compared to 2,4-D acid and MCPA applications; silvex applications resulted in significantly lower yield of red fescue seed
REFERENCE: Peabody, D.V. and H.M. Austenson, "Herbicides and Their Effect on the Yield of Grass Seed," Agron. J. 57(1):633-634 (1965).

<359>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Cassia (CASSIA NEMOPHILIA); Cassia (CASSIA ARTEMISIOIDES)
EXPERIMENTAL DOSE: 0.5 and 1.0%
APPLICATION METHODS: Postemergence spray on bark or high-volume spray on foliage; non-ionic Agral-60 surfactant; with or without diesel distillate
EXPERIMENTAL CONDITIONS: Field study; methanical and biological (sheep) control also studied
EFFECTS: Moderately effective control of CASSIA at 1.0% rate
COMMENTS: 2,4,5-T and combinations of picloram with 2,4,5-T and 2-4-D reasonably effective means of killing species of CASSIA, but at higher rates than research indicated elsewhere; mechanical and biological control not effective
REFERENCE: Batianoff, G.N. and W.H. Burrows, "Studies in the Dynamics and Control of Woody Weeds in Semi-Arid Queensland. 2. CASSIA NEMOPHILA and C. ARTEMISIODES," Queensl. J. Agri. and Anim. Sci. 30:65-71 (1973).

<360>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Acacia (ACACIA FLAVENSCENS); Guineagrass (PANICUM MAXIMUM)
EXPERIMENTAL DOSE: 0.28, 0.56, 0.84, 1.12, and 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 96-152 l./ha; 1.4 kg/sq cm; 0.04% non-ionic wetting agent
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control at 1.12 and 2.24 kg/ha but moderate damage to stylo
COMMENTS: 2,4-D no effective on ACACIA seedlings; addition of 2,4-D to 2,4,5-T gave no better control; picloram no better than 2,4,5-T; significant damage to stylo by all herbicides evaluated
REFERENCE: Bailey, D.R., "Control of ACACIA FLAVESCENS with Herbicides," Aust. J. Exp. Agric. Anim. Husb. 12(5):441-446 (1972).

<361>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Juniper, Savin (JUNIPERUS SABINA); Broadleaf weeds
EXPERIMENTAL DOSE: 1.12 and 3.36 kg/ha; amine and ester
APPLICATION METHODS: Postemergence spray; 187 l./ha; 0.3% X-77 surfactant
EXPERIMENTAL CONDITIONS: Field study; soil--Valentine fine sand; time period--1970 to 1973; multiple and split annual applications
EFFECTS: Moderate control of weeds at higher rate after two annual applications
COMMENTS: Herbicides most effective for control of broadleaf weeds when applied in 3 consecutive years or in alternate years; herbicides applied only once did not effectively control broadleaf weeds.
REFERENCE: Morrow, L.A. and M.K. McCarty, "Control of Green Sagewort in the Nebraska Sandhills," Weed Sci. 23(6):465-469 (1975).

<362>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-T
PLANT: (DIGERA ALTERNIFOLIA)
EXPERIMENTAL DOSE: 100 - 2000 ppm
APPLICATION METHODS: Soaking seeds, 6 to 96 hr
EXPERIMENTAL CONDITIONS: Seed placed on filter paper contained in petri plates; temperature 33.5--36.5 C; evaluation time--21 days
EFFECTS: Reduced germination at 1000 ppm (6 hr soak) and at 400 ppm after prolonged soaking (24, 48, and 96 hr); enhanced inhibition and mortality occurred in combination with amitrole
COMMENTS: Herbicides may inhibit seed germination and retard seedling growth but not kill plant; longer herbicide contact time suggested
REFERENCE: Dubey, P.S. and L.P. Hall, "Effect of Herbicides on Germination, Viability, and Seed Growth of Weed Seeds. I. DIGERA ALTERNIFOLIA Aschers," Tropical Ecol. 16(1):39-42 (1975).

<363>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Yucca (YUCCA GLAUCA)
EXPERIMENTAL DOSE: 1.0 lb/A; EC
APPLICATION METHODS: Aerial spray
EXPERIMENTAL CONDITIONS: Field study; soil--dune sand
EFFECTS: No kill of yucca
COMMENTS: Yucca control by aircraft applications revealed silvex gave best yucca kill from single application of all herbicides, carriers, and spray volumes used; substantial amount of yucca regrowth found in all plots two years following treatment indicating retreatment necessary for best control
REFERENCE: Bovey, R.W., "Control of Yucca by Aerial Application of Herbicides," J. Range Manag. 17:194-196 (1964).

<364>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.1 lb/A; butoxyethanol ester
APPLICATION METHODS: Postemergence spray; 20, 40, and 60 gal/A at 20, 40, and 60 psi
EXPERIMENTAL CONDITIONS: Field study; volatility and drift studied
EFFECTS: Reduced soybean and cotton yield
COMMENTS: PBA, 2,3,6-TBA, and fenac sprays applied safely for eradication of perennial weeds in and near cotton; use of these herbicides near soybeans hazardous because very small quantities caused leaf deformities and some loss in seed yield
REFERENCE: Wiese, A.F. and A.G. Martin, "Toxicity of Benxoic Acid Herbicides to Cotton and Soybeans," Weeds 11(1):7-10 (1963).

<365>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Eucalyptus, red gum (EUCALYPTUS CAMALDULENSIS)
EXPERIMENTAL DOSE: 100 and 1000 mg/l.
APPLICATION METHODS: Exposed plant roots placed in 1.0 liter herbicide solution; triethylamine salt formulation
EXPERIMENTAL CONDITIONS: Pot studies; plastic pot (holes in bottom) with plant placed on top of another pot containing soil; after root growth through holes into second pot, plants carefully removed and placed on top of pot containing herbicide solution; 1-hr herbicide exposure
EFFECTS: 1000 mg/l. killed both roots and foliage
COMMENTS: No further testing due to potential hazards to plants other than target species
REFERENCE: Ahrens, J.F., O.A. Leonard, and N.R. Townley, "Chemical Control of Tree Roots in Sewer Lines," J. Water Pollut. Control Fed. 42(9):1643-1655 (1970).

<366>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 25, 250, and 2500 ppm
APPLICATION METHODS: Postemergence--2 ml solution sprayed on each pot each week
EXPERIMENTAL CONDITIONS: Greenhouse study; effect on flowering studied
EFFECTS: No significant flower reduction at 25 ppm; significant flower reduction at 250 and 2500 ppm
REFERENCE: Youngner, V.B. and J.R. Goodin, "Control of PENNISETUM CLANDESTINUM, Kikuyugrass," Weeds 9(2):238-242 (1961).

<367>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 0.5 of 10.0 lb/A; mixed esters
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Little or no effect
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most common phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<368>
<368>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Rabbitbrush, green (CHRYSOTHAMNUS VISICIDIFLORUS); Rabbitbrush, grey (CHRYSOTHAMNUS NAUSEOSUS)
EXPERIMENTAL DOSE: 3.0 lb/A; butoxyethanol
APPLICATION METHODS: Foliar spray; 30 psi; 5.0 to 10.9 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1950 to 1955
EFFECTS: Slight to moderate control of both species
COMMENTS: Green and grey rabbitbrush more susceptible to 2,4-D esters than to any of other herbicides used; with 2,4-D esters, an acid equivalent rate of 3 lb/A gave good rabbitbrush control
REFERENCE: Hyder, D.N., F.A. Sneva, D.O. Chilcote, and W.R. Furtick, "Chemical Control of Rabbitbrush with Emphasis Upon Simultaneous Control of Big Sagebrush," Weeds 6(3):289-297 (1958).

<369>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Mesquite, honey (PROSOPIS JULIFLORA)
EXPERIMENTAL DOSE: 0.56 kg/ha
APPLICATION METHODS: Postemergence sprays for brush control; granular herbicides spread by hand broadcasting, liquid herbicides sprayed at volume of 187 l./ha in acetone or water; polymerized herbicides sprayed in acetone (spring) and water (fall)
EXPERIMENTAL CONDITIONS: Field study; native stand and nursery grown brush plants; three replicates per treatment; randomized block experimental design
EFFECTS: Moderate control of honey mesquite
COMMENTS: Generally no significant differences in effectiveness between conventional and polymerized herbicides on honey mesquite
REFERENCE: Bovey, R.W., R.E. Meyer, P.D. Baker, and J.P. Baur, "Polymerized Herbicides for Brush Control," Weed Sci. 20(4):332-335 (1972).

<370>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Bahiagrass (PASPALUM NOTATUM); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1.5 to 6.0 lb/A; propylene glycol butyl ether ester
APPLICATION METHODS: Foliar spray; 20 to 36.6 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; soils--Lakeland fine and coarse sand and Kanapaha fine sand; results in greenhouse and field similar; time period--1956 and 1957
EFFECTS: No or slight damage of mature bahiagrass with effective weed control thus allowing turf establishment
COMMENTS: Oil soluble 2,3,6-TBA killed all bahiagrass seedlings under greenhouse conditions; same treatments, applied to seedlings in field, killed a high percentage but not all plants; carrier consisting partially or entirely of diesel oil for other herbicidl treatments caused more severe damage to seedlings than water carrier for comparable treatments
REFERENCE: Black, C.C. and E.G. Rodgers, "Response of Pensacola Bahiagrass to Herbicides," Weeds 8(1):72-77 (1960).

<371>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4,5-T
PLANT: Aster, blue wood (ASTER CORDIFOLIUS); Bindweed, field (CONVOLVULUS ARVENSIS); Bindweed, hedge (CONVOLVULUS SEPIUM); Carrot, wild (DAUCUS CAROTA); Chickweed, common (STELLARIA MEDIA); Chickweed, mouse-ear (CERASTIUM VULGATUM); Clover (TRIFOLIUM sp.); Copperleaf, Virginia (ACALYPHA VIRGINICA); Daisy, oxeye (CHRYSANTHEMUM LEUCANTHEMUM); Dandelion (TARAXACUM OFFICINALE); Dock, broad-leaf (RUMEX OBTUSIFOLIUS); Dogbane, hemp (APOCYANUM CANNABINUM); Fleabane, annual (ERIGERON ANNUS); Horsenettle (SOLANUM CAROLINENSE); Ironweed (VERONICA ALTISSIMA); Poison ivy (RHUS RADICANS); Ladysthumb (POLYGONUM PERSICARIA); Onion, wild (ALLIUM sp.); Plantain, broad-leaf (PLANTAGO MAJOR); Plantain, buckhorn (PLANTAGO LANCEOLATA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Sorrell, red (RUMEX ACETOSELLA); Spanish needles (BIDENS BIPINNATA); Vetch, common (VICIA SATIVA); Violet (VIOLA sp.); Sorrell, wood (OXALIS STRICTA); Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 4.48 and 22.4 kg/ha; ester and amine
APPLICATION METHODS: Postemergence spray; 1870 l./ha (low rate) and 9350 l./ha (high rate); applied to ground cover and soil beneath apple trees
EXPERIMENTAL CONDITIONS: Field study; annual applications over 6 yr period (1957 through 1962)
EFFECTS: Moderate to effective control of broadleafs and little or no control of grass weeds with no adverse effect on apple trees; ester generally more effective than amine
COMMENTS: Single applications of 2,4,5-T ester, 2,4,5-T amine, and silvex to ground cover and soil under apple trees significantly reduced proportion of broadleaf plants to grasses; after six annual applications, ground cover consisted of almost pure stands of grasses; six applications of dinoseb + oil decreased proportion of broadleaf weeds to grasses; one application did not change proportion; one and six annual applications of dinoseb amine significantly reduced broadleaf weeds
REFERENCE: Schubert, O.E., "Plant Cover Changes Following Herbicide Applications in Orchards," Weed Sci. 20(1):124-127 (1972).

<372>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)-, ammonium salt
CHEMICAL COMMON NAME: 2,4,5-T, Ammonium salt
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g per sq yd in 50 ml of solution (aqueous); soil application; 0.1 g per sq yd in 5 ml of solution (oil based); at 8, 24, & 40 mg/pot
APPLICATION METHODS: Aqueous & oil sprays in spray chambers; field studies utilized modified De Vilbiss type CV paint sprayer; soil applications also
EXPERIMENTAL CONDITIONS: In pots in greenhouse; in fields of fertilized silt loam; rows 3 ft apart, plants at 1 ft intervals; soil contamination study--pots used with no contact with vegetative plant parts

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EFFECTS: Both oil and water based sprays reduced growth and crop yield; soil contamination resulted in some growth malformation and reduced tuber yield
COMMENTS: Chemical inappropriate for weed control for potato crops; chlorinated 5 position of phenoxyacetic acids insignificant for phytocidal action; 2,4,5-trichloro configuration is significant
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<373>
CHEMICAL NAME: Acetic acid, (2,4,5-trichlorophenoxy)thio-
CHEMICAL COMMON NAME: Thio-2,4,5-T
PLANT: Linseed (LINUM USITATISSIMUM); Wheat (TRITICUM AESTIVUM); Cress (BARBAREA sp.); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 5X10(-6) to 1X10(-2) M
APPLICATION METHODS: Postemergence spray (plants removed from culture solution); dipping intact plants in solutions (2 hr); addition to culture solution in small amounts
EXPERIMENTAL CONDITIONS: Laboratory study; hydroponically cultured test plants; artificial light; temperature--22 C
EFFECTS: Growth reduction and malformation
COMMENTS: Specificity of the thio compounds differs from acetic acids; thio-2,4-D less active on wheat but more active on cress and peas; thio-2,4,5-T decidedly more active on wheat but probably less on peas; more active than 2,4,5-T to all test plants
REFERENCE: Burstrom, H., B. Sjoberg, and B. A. M. Hansen, "The Plant Growth Activity of Phenoxythioacetic Acids," Acta Agric. Scand. 6:155-177 (1956).

<374>
CHEMICAL NAME: Acetic acid, (2,4,6-trichlorophenoxy)-, sodium salt
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity approximately equal to alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<375>
CHEMICAL NAME: Acetic acid, (2,5-dichlorophenoxy)-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<376>
CHEMICAL NAME: Acetic acid, (2,5-dichlorophenoxy)-
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 50 ml solution (aqueous); 0.1 g/sq yd in 5 ml solution (oil)
APPLICATION METHODS: Aqueous & oil sprays applied in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: No significant effects
COMMENTS: Chlorinated 5 position of substituted phenoxyacetic acids did not appear to have any significance as far as phytocidal action on potato
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<377>
CHEMICAL NAME: Acetic acid, (2,5-dimethylphenoxy)-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested

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<377> CONT.
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<378>
CHEMICAL NAME: Acetic acid, (2,5-dimethylphenoxy)-
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 5 ml of oil solution
APPLICATION METHODS: Spray in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: No significant effects
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<379>
CHEMICAL NAME: Acetic acid, (3-chlorophenoxy)-
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 5 ml of oil solution
APPLICATION METHODS: Spray in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: No significant effects
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<380>
CHEMICAL NAME: Acetic acid, (3-methylphenoxy)-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<381>
CHEMICAL NAME: Acetic acid, (3,4-dichlorophenoxy)-
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 5 ml of oil solution
APPLICATION METHODS: Spray in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: No significant effects
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<382>
CHEMICAL NAME: Acetic acid, (3,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 3,4-DA
PLANT: Rabbitbrush, green (CHRYSOTHAMNUS VISICIDIFLORUS); Rabbitbrush, grey (CHRYSOTHAMNUS NAUSEOSUS)
EXPERIMENTAL DOSE: 3.0 lb/A; iso-octyl
APPLICATION METHODS: Foliar spray; 30 psi; 5.0 to 10.9 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1950 to 1955
EFFECTS: Slight control of both species
COMMENTS: Green and grey rabbitbrush more susceptible to 2,4-D esters than to any of other herbicides used; with 2,4-D esters, an acid equivalent rate of 3 lb/A gave good rabbitbrush control
REFERENCE: Hyder, D.N., F.A. Sneva, D.O. Chilcote, and W.R. Furtick, "Chemical Control of Rabbitbrush with Emphasis Upon Simultaneous Control of Big Sagebrush," Weeds 6(3):289-297 (1958).

<383>
CHEMICAL NAME: Acetic acid, (3,4-dimethylphenoxy)-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested

<383> CONT.
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<384>
CHEMICAL NAME: Acetic acid, (3,5-dichlorophenoxy)-
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 5 ml of oil solution
APPLICATION METHODS: Spray in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: Reduced growth of plant material; no effect on crop yield
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

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CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Bean, kidney (PHASEOLUS VULGARIS) ; Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.001 to 0.1% of ratio--MW of MCPA/MW of DCPA
APPLICATION METHODS: Postemergence spray; infield--100 gal/A ; sodium salt formulation
EXPERIMENTAL CONDITIONS: Greenhouse study (bean and flax); soil--Dickson grey-brown clay; field study (wheat and barley)
EFFECTS: Reduced yield of bean and wheat when applied to wheat in seedling and flowering stages
COMMENTS: Wheat exhibited differential responses to phenoxyacetic acid compounds and isopropyl phenylearbamate at different growth stages; applications of four phenoxyaccetic acid compounds to wheat at different stages of development, from late seedling to flowering, showed grain yields reduced most markedly by applications in seedling stage; isopropyl phenylcarbamate had no effect on wheat in late seedling or tillering stages, but severely depressed yield of grain when applied at flowering; barley responded similarly; higher concentrations applied to wheat at pre-shooting also reduced grain yields;
REFERENCE: Moore, R.M., "Differential Effects of Certain Phenoxyacetic Acid Compounds and Phenylcarbamates on Plant Species," Austral. J. Agric. Res. 1:401-412 (1950)

<386>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Capewood (ARCTOTHECA CALENDULA)
EXPERIMENTAL DOSE: 0.56 kg/ha
APPLICATION METHODS: Postemergence spray; 112 l./ha
EXPERIMENTAL CONDITIONS: Field study; time period-- 1966 to 1970; 5 locations in Australia
EFFECTS: Effective control of capeweed
COMMENTS: Most satisfactory herbicides tested for control of capeweed were bromoxynil, linuron, diquat, and prometryne; in one year tested methabenzthiazuron effective
REFERENCE: Reeves, T.G. and J.M. Lumb, "Selective Chemical Control of Capeweed in Wheat," Aust. J. Exp. Agric. Anim. Husb. 12:60-64 (1972).

<387>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Bursage, wollyleaf (FRANSERIA TOMENTOSA)
EXPERIMENTAL DOSE: 22, 33, and 45 kg/ha
APPLICATION METHODS: Soil sterilant application with and without incorporation; postemergence sprays at varied stages of plant development; liquid sprays at 188 l/ha; pellets or granules broadcast by hand
EXPERIMENTAL CONDITIONS: Field study; non-crop areas; time period--1962 to 1968; evaluation time--up to 3 yr; soil--clay loam
EFFECTS: Slight to moderate control for not more than 12 mo
COMMENTS: Fenac controlled woollyleaf bursage for 3 years in noncropped areas; effective control of woollyleaf bursage obtained when treated at bud stage or earlier with ester formulation of 2,4-D
REFERENCE: Smith, D.T., A.F. Wiese, and A.W. Cooley, "Woollyleaf Bursage Response to Selected Herbicides," Weed Sci. 20(6):554-556 (1972).

<388>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: Methoxone
PLANT: Hyacinth, water (EICHHORNIA CRASSIPES); Duckweed (LEMNA sp.); Salvinia (SALVINIA ROTUNDIFOLIA)
EXPERIMENTAL DOSE: 1% dust and 0.0001 to 2.0% solutions
APPLICATION METHODS: Dust, 0.0001 to 0.1% sprays, and 0.01 to 2.0% growth mediums
EXPERIMENTAL CONDITIONS: Glass house experiments; water-hyacinth transplanted from tank to earthenware tubs, experiments conducted after establishment; multiple experiments
EFFECTS: Dust treatments--plant killed within 20 days; spray dilutions--0.01 to 0.1% spray solutions caused death within 20 days, 0.0001% showed morphological changes but no plants killed; growth medium--2.0 and 1.0% killed plants after 20 days, other dilutions did not; other water weeds--0.1% spray lethal, same amount in culture solution not as effective
COMMENTS: Sprays more effective than culture solutions
REFERENCE: Kar, B.K., "Methoxone as Eradicator of Water-Hyacinth and Other Aquatic Weeds," Sci. Cult. 12(11):545-550 (1974).

<389>
<389>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 50 lb/A
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Field study; leaching and degradation experiments over time periods up to 3 mo
EFFECTS: Reduced germination of soybean for up to 69 da
COMMENTS: 2,4-D and IPC when applied in excessive amounts, readily leached from soil; when leaching prevented, former compound inactivated; 2-methyl-4-chlorophenoxyacetic acid and 2,4,5-trichlorophenoxyacetic acid much more persistent, and herbicidally active for longer period of time than 2,4-D
REFERENCE: DeRose, H. R., "Persistence of Some Plant Growth-Regulators When Applied to the Soil in Herbicidal Treatments," Bot. Gaz. 106:583-589 (1946).

<390>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Linseed (LINUM USITATISSIMUM); Wheat (TRITICUM AESTIVUM); Cress (BARBAREA sp.); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 5X10(-6) to 1X10(-2)M
APPLICATION METHODS: Postemergence spray (plants removed from culture solution); dipping intact plants in solutions (2 hr); addition to culture solution in small amounts
EXPERIMENTAL CONDITIONS: Laboratory study; hydroponically cultured test plants; artificial light; temperature--22 C
EFFECTS: Reduced growth of all test plants with varied growth abnormalities; generally more injurious than thio-MCPA to flax, wheat, and peas but not to cress
COMMENTS: Specificity of the thio compounds differs from acetic acids; thio-2,4-D less active on wheat but more active on cress and peas; thio-2,4,5-T decidedly more active on wheat but probably less on peas
REFERENCE: Burstrom, H., B. Sjoberg, and B. A. M. Hansen, "The Plant Growth Activity of Phenoxythioacetic Acids," Acta Agric. Scand. 6:155-177 (1956).

<391>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3)M; moderate control at 10(-4)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<392>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Orchard grass (DACTYLIS GLOMERATA); Fescue, creeping red (FESTUCA RUBRA); Timothy (PHLEUM PRATENSE); Bentgrass (AGROSTIS sp.); Plants
EXPERIMENTAL DOSE: 2.0 lb/A; amine
APPLICATION METHODS: Postemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Puget silt loam
EFFECTS: Effective control of weeds with no adverse effect on turf grasses
COMMENTS: Orchardgrass seed yields, significantly decreased by 2,4-D (acid) and silvex (yields from these plots did not differ significantly); silvex and 2,4,5-T ester applications in red fescue plantings significantly decreased seed yield compared to 2,4-D acid and MCPA applications; silvex applications resulted in significantly lower yield of red fescue seed
REFERENCE: Peabody, D.V. and H.M. Austenson, "Herbicides and Their Effect on the Yield of Grass Seed," Agron. J. 57(1):633-634 (1965).

<393>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.75 and 1.00 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; trials in 5 states (ND, MN, SD, MT, and CO)
EFFECTS: Effective control of wild oats in most attempts
COMMENTS: Excellent wild oat control obtained in 49 out of 57 difenzoquat tests; application of MCPA, MCPA + bromoxynil, or bromoxynil in tank-mix combinations with difenzoquat did not affect control of wild oats, nor was performance of broadleaf herbicides affected; aerial and ground applications of difenzoquat equally effective in wild oat control
REFERENCE: Weis, M.E., E.M. Jorgenson, C.B. Wingfield, and T. Wang, "Wild Oat Control in Barley With Difenzoquat Alone and in Combination With Broadleaf Herbicides During 1975 Under an EPA Experimental Permit," Proc. Northcent. Weed Contr. Conf. 30:106-109 (1975).

<394>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<395>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.28 to 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 168 l/ha
EXPERIMENTAL CONDITIONS: Field study; weed-free plots; 4 locations in Australia; time period--1966 to 1972
EFFECTS: Reduced yield
COMMENTS: All chemicals lowered grain yields to some extent, but variation between chemicals greater for wheat than for barley; in both crops, methabenzthiazuron safest chemical causing only small yield losses at rates up to 2.25 kg/ha
REFERENCE: Elliott, R.R., J.M. Lumb, T.G. Reeves, and T.E. Telford, "Yield Losses in Weed-Free Wheat and Barley Due to Post-Emergence Herbicides", Weed Res. 15(2):107-111 (1975).

<396>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Plants; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 0.8 and 1.6 kg/ha; G and EC
APPLICATION METHODS: Broadcast (G) and spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control and increased rice yield
COMMENTS: 2,4-D and MCPA equally effective in controlling barnyard grass and other annual weeds in transplanted rice; yields significantly increased in nearly all applications; for direct-seeded flooded rice, granular formulations of several new herbicides, such as butachlor, benthiocarb and C-288 highly selective in controlling barnyardgrass and other annual weeds under tropical conditions
REFERENCE: De Datta, S.K., "Chemical Weed Control in Tropical Rice in Asia," PANS 28(4):433-440 (1972).

<397>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Clover, red (TRIFOLIUM PRATENSE)
EXPERIMENTAL DOSE: 0.28, 0.56 and 0.84 kg/ha
APPLICATION METHODS: Alkanolamine salts; postemergence application as spray in 140 l./ha water
EXPERIMENTAL CONDITIONS: Albright-Landry silt loam to clay loam soils; 2 stage applications for 2 years--beginning of spring growth (stage 1) and when crop was 7.5--10 cm high (stage 2); split plot design with 6 replications; seed yields determined by harvesting strips from herbicide subplots
EFFECTS: 1973--0.28 kg/ha caused very slight delay in flowering at stage 1 and a moderate delay at stage 2, 0.56 kg/ha caused a slight delay in flowering at stage 1 and a slight to moderate delay at stage 2, seed yields were not significantly affected at either rate; 1974--no significant effect on flowering or seed yields at any rate; no significant effect on germination
COMMENTS: 1973 growing season had below normal precipitation and early frost and snow that reduced growth vigor; precipitation maintained growth vigor during 1974 growing season
REFERENCE: Darwent, A.L. and P. Pankiw, "Effects of Several Herbicides on Red Clover Seed Production," Can. J. Plant Sci. 56:413-415 (1976).

<398>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Ragwort, marsh (SENECIO AQUATICUS); Clover, white (TRIFOLIUM REPENS)
EXPERIMENTAL DOSE: 1.68 kg/ha
APPLICATION METHODS: Spring applications in April and May; MCPA salt applied with knapsack sprayer at 225 l./ha
EXPERIMENTAL CONDITIONS: Two applications--April and May; 20 m x 6 m plots; observations made for 2 years, applications made only during first year
EFFECTS: April spraying gave 53% ragwort control, May gave 87% during spraying year; not much difference in residual effects the following year, 84% April and 95% ragwort control from May spraying the previous year; marked reduction in clover
COMMENTS: Spraying year--May spraying gave better control of ragwort than April spraying; year after spraying-- spraying differences disappeared; all treatments gave better control year after spraying
REFERENCE: Forbes, J.C., "Chemical Control of Marsh Ragwort SENECIO-AQUATICUS in Established Grassland," Weed Res. 17(4):247-250 (1977).

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<399>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Plants; Barnyardgrass (ECHINOCHLOA CRUSGALII); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 0.8 and 1.6 kg/ha
APPLICATION METHODS: Postemergence spray and granular applications; G, WP, and EC formulations; allyl ester, ethyl ester, dimethyl amine salt, and potassium salt
EXPERIMENTAL CONDITIONS: Field study; soil--Maahas clay (India); pH--6.0; time period--1968 to 1970
EFFECTS: Generally less effective than 2,4-D formulations and more injurious to rice plants although yields increased; ethyl ester appeared most promising
COMMENTS: All commonly marketed formulations and derivatives of either MCPA or 2,4-D performed in about the same way and were equally safe for use in controlling barnyardgrass and other annual weeds in transplanted rice; seven-day-old rice seedlings were more susceptible to amine salt of 2,4-D or MCPA than 24-day old seedlings; granular formulations of some chemicals were relatively less toxic than liquid formulations
REFERENCE: De Datta, S.K., R.Q. Lacsina, and D.E. Seaman, "Phenoxy Acid Herbicides for Barnyardgrass Control in Transplanted Grass," Weed Sci. 19(3):203-206 (1973).

<400>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS); Ladysthumb (POLYGONUM PERSICARIA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.3 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Plano silt loam; visual estimates of weeds; evaluation time--about 2 mos. (at harvest)
EFFECTS: Moderate control of broadleaf weeds; poor control of grasses; epinasty of pea plants
COMMENTS: Of six herbicides evaluated, propachlor and a combination of dalapon and MCPB provided most effective control of annual weeds with least risk of pea crop injury
REFERENCE: Harvey, R.G., E.T. Gritton, and R.E. Doersch, "Effects of Selected Herbicides on Annual Weed Control and Production of Processing Peas," Agron. J. 64(1):812-815 (1972).

<401>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Stinkweed (THLASPI ARVENSE); Thistle, Russian (SALSOLA IBERICA); Lamb's-quarters (CHENOPODIUM ALBUM); Buckwheat, wild (POLYGONUM CONVOLVULUS); Tomato, wild (SOLANUM TRIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.28 and 0.56 kg/ha; amine or ester
APPLICATION METHODS: Postemergence spray; 112 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Indian Head clay; time period--1947 to 1972; annual applications
EFFECTS: At 0.56 kg/ha, slight to effective control of all weeds with no adverse effect on wheat yield
COMMENTS: Some reductions in grain yields caused by high rates of 2,4-D ester formulations but there was no evidence of any buildup of herbicides or harmful residual effects from treatments; herbicides did not eradicate any of weeds but drastically reduced numbers emerging in crops and on summer fallow.
REFERENCE: McCurdy, E.V. and E.S. Molberg, "Effects of the Continuous Use of 2,4-D and MCPA on Spring Wheat Production and Weed Populations," Can. J. Plant Sci. 54:241-245 (1974).

<402>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Barley (HORDEUM VULGARE); Cocklebur, Pennsylvanian (XANTHIUM PENSYLVANICUM); Linseed (LINUM USITATISSIMUM)
EXPERIMENTAL DOSE: 0.5 to 10.5 ppm
APPLICATION METHODS: Addition to culture solution
EXPERIMENTAL CONDITIONS: Environmental chamber; hydroponic culture; whole roots or one-third of roots immersed in test solutions; pH--7.0; temperature--16 to 23 C; RH--50 to 70%; photoperiod--12 hr
EFFECTS: At 0.5 to 2.0 ppm, death of pea and barley; at 10.5 ppm, death of flax
COMMENTS: Propham, chlorpropham, atratone and 2,3,6-TBA killed plants whether application was to one-third or all roots; roots in direct contact with propham, chlorpropham and 2,3,6-TBA deformed or killed, while roots in uncontaminated solution remained healthy; atratone and chlorpropham transmitted to roots not in toxic solution
REFERENCE: Lyndsay, R.V. and G.S. Hartley, "Studies of the Response of Plants to Root-Applied Herbicides," Weed Res. 3(3):195-204 (1963).

<403>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 10 ml solution (aqueous and oil)
APPLICATION METHODS: Applied using modified DeVilbiss paint sprayer at plant height 8-10 inches
EXPERIMENTAL CONDITIONS: Fields of fertilized silt loam; rows 3 ft apart, plants at 1 ft intervals
EFFECTS: Significant reduction in crop yield with oil application; no effect with aqueous application
COMMENTS: Selective resistance of potato to test compound and other substituted phenoxyacetic acids; their effectiveness in controlling broadleaf weeds suggests use in aqueous solutions perhaps combined with fungicide or insecticide
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<404>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 2.0 to 10.0 lb/A; sodium salt
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Killed at 5.0 lb/A
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most common phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<405>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Rabbitbrush, green (CHRYSOTHAMNUS VISICIDIFLORUS); Rabbitbrush, grey (CHRYSOTHAMNUS NAUSEOSUS)
EXPERIMENTAL DOSE: 3.0 lb/A; butoxyethanol
APPLICATION METHODS: Foliar spray; 30 psi; 5.0 to 10.0 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1950 to 1955
EFFECTS: Moderate control of both species
COMMENTS: Green and grey rabbitbrush more susceptible to 2,4-D esters than to any of other herbicides used; with 2,4-D esters, an acid equivalent rate of 3 lb/A gave good rabbitbrush control
REFERENCE: Hyder, D.N., F.A. Sneva, D.O. Chilcote, and W.R. Furtick, "Chemical Control of Rabbitbrush with Emphasis Upon Simultaneous Control of Big Sagebrush," Weeds 6(3):289-297 (1958).

<406>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Spurrey, corn (SPERGULA ARVENSIS); Sorrel, wood (OXALIS LATIFOLIA)
EXPERIMENTAL DOSE: 5.0 lb/A; sodium salt and butyl ester
APPLICATION METHODS: Foliar spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of spurry (required 4 wk) and moderate control of OXALIS
COMMENTS: Extar A and Triherbide NIX proved definitely better than others on SPERGULA ARVENSIS; were quick in action, while MCPA and mixture of sodium 2,4-D proved ineffective against this weed
REFERENCE: Naravanan, T.R. and D. Meenakshisundaram, "Studies on the Relative Efficacies of a Few Chemical Herbicides in the Control of SPERGULA ARVENSIS, L. and OXALIS LATIFOLIA HBBK., Two Important Weeds of the Nilgiris," Madras Agric. J. 45(1):1-6 (1958).

<407>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Dock, broad-leaf (RUMEX OBTUSIFOLIUS); Dock, curly (RUMEX CRISPUS)
EXPERIMENTAL DOSE: 3.12 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; established grasslands; time period--1970-1972; 12 sites; applied in varied combinations and schedules; G less effective
EFFECTS: Moderate control of docks but less effective than dicamba
COMMENTS: No herbicide achieved total control; double spraying of dicamba particularly effective but at exorbitant cost for farm-scale use; next best control attained by dicamba-based herbicides sprayed in May successively for two years
REFERENCE: Frame, J. and R.D. Harkness, "Herbicides for Control of Docks (RUMEX spp.) in Grassland," Proc. 11th. Br. Weed Cont. Conf. 11(1):323-330 (1972).

<408>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Ragwort (SENECIO JACOBEA); Ragwort, marsh (SENECIO AQUATICUS)
EXPERIMENTAL DOSE: 1.40 to 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 220 l./ha; applied at rosette or flowering stages
EXPERIMENTAL CONDITIONS: Field study; established grasslands
EFFECTS: Moderate control of ragworts
COMMENTS: MCPA equally effective in preventing flowering in year of spraying of both SENECIO JACOBAEA and S. AQUATICUS if applied at rosette stage in mid-May; 2,4-D ester gave significantly better control of both flowering plants and first year plants of S. JACOBAEA in year of spraying than MCPA
REFERENCE: Forbes, J.C., "Spraying and Cutting Experiments on Ragwort (SENECIO JACOBAEA L. and S. AQUATIOUS HILL)," Proc. 12th. Br. Weed Cont. Conf. 2:743-750 (1974).

<409>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1.5 l./ha; U 46 M Fluid; dimethyl amine
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field/greenhouse study; field herbicide application and seed collecting; greenhouse pot culture for seed viability; annual applications for 12 yr; abnormal plants produced from some viable seed
EFFECTS: Reduced weed seed survival and abnormal plants from surviving seed

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<409> CONT.
COMMENTS: Reduction in total weed seeds by different control measures was: DNOC greater than 2,4-D greater than calcium cyanamide greater than MCPA greater than "rotation" greater than harrow; rotation was a rotation of MCPA, DNOC, calcium cyanamide, and harrowing
REFERENCE: Hurle, K., "Effect on Long-Term Weed Control Measures on Viable Weed Seeds in the Soil," Proc. 12th Brit. Weed Contr. Conf. 12(3):1145-1152 (1974).

<410>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPA
PLANT: Primrose, water (JUSSIAEA sp.)
EXPERIMENTAL DOSE: 2.0, 4.0, and 6.0 lb/100 gal; 0.02% liquid Lux
APPLICATION METHODS: Spray to wet above-water portions of plant
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control at 30 days
COMMENTS: Little difference between chemicals after 11 days; all treatments gave complete kill by 30 days after spraying
REFERENCE: Hardcastle, W.S. and J.T. Davis, "The Control of Water-Primrose in Quiescent Waters," Proc. S. Weed Conf. 12:152-153 (1959).

<411>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-, ammonium salt
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g per sq yd in 50 ml of solution
APPLICATION METHODS: Aqueous and oil sprays in spray chamber
EXPERIMENTAL CONDITIONS: In pots in greenhouse
EFFECTS: Aqueous and oil sprays caused significant yield reduction; no growth reduction or change in yield quality
COMMENTS: Selective resistance of potato and effectiveness in controlling broadleaf weeds suggests compound use in aqueous solutions perhaps with fungicide or insecticide
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<412>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-, potassium salt
CHEMICAL COMMON NAME: MCPA-K Salt
PLANT: Rice (LEERSIA ORYZOIDES); Nutsedge, purple (CYPERUS ROTUNDUS); Junglerice (ECHINOCHLOA COLONUM)
EXPERIMENTAL DOSE: 0.8 and 1.5 kg/ha
APPLICATION METHODS: Application--20 and 28 days after seeding respectively, application by knapsack sprayer at 670 dm(3)/ha volume
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; 3 x 5 m plots; visual toxicity and weed control ratings
EFFECTS: E. COLONUM susceptible; C. ROTUNDUS resistant; no rice toxicity
COMMENTS: Propanil/MCPA-K salt combination not as effective as single herbicides
REFERENCE: Aryeetey, A.N., "Chemical Weed Control in Rice in Ghana," Ghana J. Agric. Sci. 6:199-204 (1973).

<413>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-, sodium salt
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Poppy, corn (PAPAVER RHOEAS); Buttercup, corn (RANUNCULUS ARVENSIS); Marigold, corn (CHRYSANTHEMUM SEGETUM); Spurrey, corn (SPERGULA ARVENSIS); Charlock, yellow (BRASSICA SINAPSIS VISIANI); Charlock, white (RAPHANUS RAPHANISTRUM); Pennycress, field (THLASPI ARVENSE); Mayweed (ANTHEMIS COTULA); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Spray treatments, in 100 gpa water in one test
EXPERIMENTAL CONDITIONS: Pot and field studies; weeds at various stages of growth during treatment
EFFECTS: Good control all but mayweed; no damage to oats; may weed described as somewhat resistant
COMMENTS: Root and leaf absorption--germination prevented and established plants killed by both.
REFERENCE: Slade, R. E., W. G. Templeman, and W. A. Sexton, "Plant-Growth Substances as Selective Weed-Killers, Differential Effect of Plant-Growth Substances on Plant Species," Nature 155:497-498 (1945).

<414>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-, sodium salt
PLANT: Charlock, yellow (BRASSICA ARVENSIS); Charlock, white (RAPHANUS RAPHANISTRUM); Pennycress, field (THLASPI ARVENSE); Mustard, treacle (ERYSIMUM CHEIRANTHOIDES); Goosefoot (ATRIPLEX PATULA); Lamb's-quarters (CHENOPODIUM ALBUM); Mayweed, scentless (MATRICARIA INODORA); Cornflower (CENTUREA CYANUS); Chamomile, wild (MATRICARIA CHAMOMILLA); Knotweed (POLYGONUM AVICULARE); Buckwheat, wild (POLYGONUM CONVOLVULUS); Venus comb (SCANDSIZ PECTEN-VENERIS); Poppy, field or corn (PAPAVER RHOEAS); Fumitory, common (FUMARIA OFFICINALIS); Parsley-piert (ALCHEMILLA MICROCORPA); Spurrey, corn (SPERGULA ARVENSIS); Hempnettle (GALEOPSIS TETRAHIT); Speedwell, ivy-leaf (VERONICA HEDERIFOLIA); Barley (HORDEUM VULGARE); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.025 to 0.25 %
APPLICATION METHODS: Foliar spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of charlock, pennycress, mustard, cornflower, poppy, buttercup, nettle, and speedwell with less effective control other weeds and no adverse effect on oats and barley
COMMENTS: Copper chloride at higher concentrations and sulphuric acid gave small increases in yield; 4-chloro-3-methyl-phenoxyacetic acid, had no adverse effect on spring and autumn-sown cereals; at higher concentrations may cause reduction in yield of spring oats and barley
REFERENCE: Blackman, G.E., "A Comparison of Certain Plant-Growth Substances With Other Selective Herbicides," Nature 155(3939):500-501 (1945).

<415>
CHEMICAL NAME: Acetic acid, (4-chloro-2-methylphenoxy)-, sodium salt
CHEMICAL COMMON NAME: Sodium MCPA
PLANT: Pine, Scots (PINUS SYLVESTRIS); Spruce, sitka (PICEA SITCHENSIS); Larch, Japanese (LARIX sp.)
EXPERIMENTAL DOSE: 0.1, 0.2 and 0.4%
APPLICATION METHODS: Treatment when most seedlings in young true leaf stage; spray at 100 gpa
EXPERIMENTAL CONDITIONS: Pot studies; spraying performed in greenhouse but pots placed outside for test; watering when necessary; acute and chronic toxicity assessed; weed control not studied
EFFECTS: 84, 75, and 94% kill of scotspine (after 2 mo), spruce (after 15 days), and larch (after 1 mo), respectively, at 0.4%; 0.1 and 0.2% also killed trees but not as many
COMMENTS: Laboratory tests on effect on germination of several species of pine also reported; 0.2% generally used for weed control
REFERENCE: Srivastava, T.N., "The Applications of Selective Herbicides to Forestry Practice," Indian For. 77:176-191 (1951).

<416>
CHEMICAL NAME: Acetic acid, (4-chloro-3-methylphenoxy)-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<417>
CHEMICAL NAME: Acetic acid, (4-chlorophenoxy)-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Severe damage to peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<418>
CHEMICAL NAME: Acetic acid, (4-chlorophenoxy)-
PLANT: Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 40 mg of lanolin preparation (1% experimental compound)
APPLICATION METHODS: Applied directly to primary leaf pulvinus
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Trifoliate leave dwarfed
COMMENTS: 4-chlorophenoxyacetic acid very active as was 4-chlorophenyl ester; slight effect noted within two days after application; within ten days stems badly swollen and trifoliate leaves dwarfed
REFERENCE: Kalinowski, M.L. and L.W. Kalinowski, "Cyclization of Phenoxyacetic Acid and Some Chlorophenoxyacetic Acids," J. Chem. Soc. 70:1970-1971 (1948).

<419>
CHEMICAL NAME: Acetic acid, (4-chlorophenoxy)-, ammonium salt
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd
APPLICATION METHODS: Aqueous spray applied in spray chamber in 50 ml solution
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: No significant effects
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<420>
CHEMICAL NAME: Acetic acid, (4-chlorophenoxy)-, sodium salt
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and

<420>
<420> CONT.
growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<421>
CHEMICAL NAME: Acetic acid, (4-chlorophenoxy)-, 4-chlorophenyl ester
PLANT: Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 40 mg of lanolin preparation (1% experimental compound)
APPLICATION METHODS: Applied directly to primary leaf pulvinus
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Trifoliate leave dwarfed
COMMENTS: 4-chlorophenoxyacetic acid very active as was 4-chlorophenyl ester; slight effect noted within two days after application; within ten days stems badly swollen and trifoliate leaves dwarfed
REFERENCE: Kalinowski, M.L. and L.W. Kalinowski, "Cyclization of Phenoxyacetic Acid and Some Chlorophenoxyacetic Acids," J. Chem. Soc. 70:1970-1971 (1948).

<422>
CHEMICAL NAME: Acetic acid, (4-chlorophenoxy), butoxyethanol ester-
CHEMICAL COMMON NAME: 4-CPA
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 2.0 to 6.0 lb/A; butoxyethanol ester
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Moderate kill
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most common phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<423>
CHEMICAL NAME: Acetic acid, (4-chlorophenoxy), butoxyethanol ester-
CHEMICAL COMMON NAME: 4-CPA
PLANT: Rabbitbrush, green (CHRYSOTHAMNUS VISICIDIFLORUS); Rabbitbrush, grey (CHRYSOTHAMNUS NAUSEOSUS)
EXPERIMENTAL DOSE: 3.0 lb/A; butoxyethanol
APPLICATION METHODS: Foliar spray; 30 psi; 5.0 to 10.9 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1950 to 1955
EFFECTS: No control of either species
COMMENTS: Green and grey rabbitbrush more susceptible to 2,4-D esters than to any of other herbicides used; with 2,4-D esters, an acid equivalent rate of 3 lb/A gave good rabbitbrush control
REFERENCE: Hyder, D.N., F.A. Sneva, D.O. Chilcote, and W.R. Furtick, "Chemical Control of Rabbitbrush with Emphasis Upon Simultaneous Control of Big Sagebrush," Weeds 6(3):289-297 (1958).

<424>
CHEMICAL NAME: Acetic acid, (4-methylphenoxy)-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity rated as greater than alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<425>
CHEMICAL NAME: Acetic acid, (4-nitrophenoxy)-, sodium salt
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Some inhibition of charlock germination (percent inhibition not given); little or no effect on oat growth or germination
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<426>
CHEMICAL NAME: Acetic acid, [(benzoylamino)oxy]-
CHEMICAL COMMON NAME: Benzadox
PLANT: Kochia (KOCHIA SCOPARIA); Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 1.0 to 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; time period--1967 and 1968; evaluation times--weekly and at harvest
EFFECTS: Effective control of kochia at 3.0 and 4.0 lb/A with reduced root and sucrose yield of sugarbeet similar to non-weeded control yield
COMMENTS: Benzadox as a postemergence treatment controlled kochia selectively in sugarbeets; control increased as rate of benzadox increased, but some kochia survived
REFERENCE: Weatherspoon, D.M. and E.E. Schweizer, "Control of Kochia in Sugarbeets With Benzadox," Weed Sci. 18(1):183-185 (1970).

<427>
CHEMICAL NAME: Acetic acid, [(3-phenyl-1,2,4-thiadiazol-5-yl)thio]-
CHEMICAL COMMON NAME: NC-9634
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<428>
CHEMICAL NAME: Acetic acid, [(3,5,6-tirchloro-2-pyridinyl)oxy]-
PLANT: Wheat (TRITICUM AESTIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: Wheat experiment--6.25, 12.5, 25.0, 50.0, and 100 ppm; tomato experiments--(1) 30 ppm, (2) 250, 500, 500, 1000, and 2000 ppm
APPLICATION METHODS: Wheat experiment--50 ml of each dilution added to soil; tomato experiments--(1) excised tops placed in 30 ppm solution, (2) potted plants sprayed to runoff.
EXPERIMENTAL CONDITIONS: Wheat experiment--plants grown in sand, treatments begun when plants well established, 50 ml of each dilution added daily for 10 days; tomato experiments--(1) excised 6 to 8 in. high tops allowed to take up 30 ppm solution, observations and growth measurements made, (2) plants grown in pots, sprayed to runoff.
EFFECTS: Wheat experiment--growth reduction and leaf distortion increasing with concentration; tomato experiments--(1) growth reduction, (2) marginal chlorosis and necrosis, higher doses (above 250 ppm) caused damage to foliage appearing after spraying
COMMENTS: Tomato protoplast studies also reported
REFERENCE: Ross, R.G. and R.A. Ludwig, "A Comparative Study of Fungitoxicity and Phytotoxicity in an Homologous Series of N-N-Alkylethylenethioureas," Can. J. Bot. 35:65-95 (1957).

<429>
CHEMICAL NAME: Acetic acid, [(3,5,6-tirchloro-2-pyridinyl)oxy]-
CHEMICAL COMMON NAME: M-3724
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sassafras (SASSAFRAS ALBIDUM); Locust, black (ROBINIA PSEUDO-ACACIA); Maple (ACER sp.); Blackberry (RUBUS sp.); Oak, black (QUERCUS KELLOGII); Manzanita (ARCTOSTAPHYLOS sp.); Cherry (PRUNUS sp.); Poison oak (RHUS TOXICODENDRON); Salmonberry (RUBUS SPECTABILIS); Hemlock (TSUGA sp.); Mesquite (PROSOPIS sp.); Rose (ROSA sp.); Redroot (CEANOTHUS sp.); Willow (SALIX sp.); Pine, Ponderosa (PINUS PONDEROSA); Ash (FRAXINUS sp.); Bindweed, field (CONVOLVULUS ARVENSIS)
EXPERIMENTAL DOSE: Broadcast spray--1 to 3 gpa; high volume full coverage spray--0.5 to 1.0 gal/100 gal water
APPLICATION METHODS: Foliage spray; water soluble triethylamine salt formulation
EFFECTS: More effective than 2,4,5-T on sassafras, black locust, ash, maple and blackberry; more effective than 2,4-D on field bindweed and Canada thistle but not as good as picloram; good control of other species
COMMENTS: Trade name DOWCO 233; ester formulation (M-4021) not as effective as amine salt (M-3724)
REFERENCE: Haagsma, T., "DOWCO 233 Herbicide-a Possible New Tool in Vegetation Management," Down Earth 30(4):22-24 (1975).

<430>
CHEMICAL NAME: Acetic acid, [(3,5,6-trichloro-2-pyridinal)oxy]-
CHEMICAL COMMON NAME: DOWCO 233
PLANT: Alder (ALNUS sp.); Blackberry (RUBUS sp.); Ardisia (ARDISIA sp.); Elderberry (SAMBUCUS sp.); Fir, Douglas (PSEUDOTSUGA MENZIESII); Hemlock (TSUGA HETERPHYLLA); Maple, big-leaf (ACER MACROPHYLLUM); Maple, vine (ACER CIRCINATUM); Rose, wild (ROSA sp.); Salal (GAULTHERIA SHALLON); Salmonberry (RUBUS SPECTABILIS); Squawbush (HOLODISCUS DISCOLOR); Spruce, sitka (PICEA SITCHENSIS); Thimbleberry (RUBUS PARVIFLORUS); Willow (SALIX sp.); Ceanothus (CEANOTHUS sp.); Chamise (ADENOSTOMA FASCICULATUM); Huckleberry (VACCINUM PARVIFLORUM); Madrone (ARBUTUS MENZESII); Manzanita (ARCTOSTAPHYLOS sp.); Oak, black (QUERCUS KELLOGII); Oak, interior live (QUERCUS AGRIFOLIA); Oak, scrub (QUERCUS ILICIFOLIA); Tan oak (LITHOCARPUS DENSIFLORA); Pine, Monterey (PINUS RADIATA); Pine, Ponderosa (PINUS PONDEROSA); Redwood (SEQUOIADENDRON SEMPERVIRENS)
EXPERIMENTAL DOSE: 1.0 to 8.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 to 450 gal/A
EXPERIMENTAL CONDITIONS: Field study; right-of-way; 16 locations in western U.S.; time period--1972 and 1973
EFFECTS: Moderate to effective control of trees and shrubs except hemlock and sitka spruce generally at lowest rate (1.0 lb/A)

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<430> CONT.
COMMENTS: Application of high volume sprays at 12 locations controlled most hardwood species regardless of location; of particular importance was high degree and consistency of ash control; western conifers appeared more tolerant than eastern conifers
REFERENCE: Byrd, B.C., W.G. Wright, and L.F. Warren, "Vegetation Control With Dowco 233 Herbicide," Proc. West. Soc. Weed Sci. 28:44-48 (1975).

<431>
CHEMICAL NAME: Acetic acid, [(3,5,6-trichloro-2-pyridinyl)oxy]-
CHEMICAL COMMON NAME: Triclopyr
PLANT: Chamise (ADENOSTOMA FASCICULATUM); Chamise, redshank (ADENOSTOMA SPARSIFOLIUM)
EXPERIMENTAL DOSE: 2.24 and 4.48 kg/ha
APPLICATION METHODS: Postemergence in 187 l./ha water with nonionic surfactant added; triethylamine salt
EXPERIMENTAL CONDITIONS: Five field tests, 4-year period; 30-year old chamise in experiment A, 3 to 4-year old chamise in other tests; randomized block design except experiment C; split-plot design for experiment C, application time as main plot and treatments as subplots, 29.7 m(2) subplot size; plot size for tests A, B, D, E, 40.9 m(2); visual injury evaluation 1 year after treatment, measured evaluation within 15 to 48 months after application
EFFECTS: 2.24 kg/ha--9% chamise control after 21 months, no redshank chamise control; 4.48 kg/ha--20% chamise control after 21 months, no redshank chamise control
COMMENTS: Foliage injury and canopy reduction also recorded
REFERENCE: Radosevich, S.R., W.L. Graves, and H.A. Agamalian, "Response of Two ADENOSTOMA Species to Several Herbicides," Weed Sci. 25(2):188-192 (1977).

<432>
CHEMICAL NAME: Acetic acid, [(5-chlorocarvacryl)oxy]-
CHEMICAL COMMON NAME: MCIP
PLANT: Hyacinth, water (EICHHORNIA HASTAEFOLIA)
EXPERIMENTAL DOSE: 0.5%; 4 ml/8 sq ft
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Death within 10 days
COMMENTS: Sodium salt MCIP more toxic than free acid; toxic effect lessened with time; leaves of water-hyacinth more susceptible to inhibitory action of MCIP than petioles
REFERENCE: Ghosh, A.C. and J.K. Chowdhury, "Control of Water-Hyacinth by 2-Methyl 4-Chloro 5-Isopropyl Phenoxyacetic Acid (MCIP) - A Contact Herbicide," Rose Res. Inst. Calcutta 19:1-8 (1953).

<433>
CHEMICAL NAME: Acetic acid, [[3-(4-chlorophenyl)-1,2,4-oxadiazol-5-yl]thio]-
CHEMICAL COMMON NAME: NC-9565
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<434>
CHEMICAL NAME: Acetic acid, alpha-chloro-trichlorophenyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: Slight control at 20.0 lb rate
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<435>
CHEMICAL NAME: Acetic acid, alpha-naphthoxy-, sodium salt
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Some inhibition of charlock germination (percent inhibition not given); little or no effect on oat

<435> CONT.
growth or germination
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<436>
CHEMICAL NAME: Acetic acid, alpha-naphthyl-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI); Plantain, broad-leaf (PLANTAGO MAJOR); Yarrow (ACHILLEA MILLEFOLIUM)
EXPERIMENTAL DOSE: 10, 20, 50, 100, and 250 mg/276 cubic in. box; 50, 100, 200, 300, and 400 ppm
APPLICATION METHODS: Box application--in 6 grams dry sand, in solution of 250 cc water, and as spray in 10 cc water, application same day as planting; Petri dish germination--ppm treatments as part of growth solutions
EXPERIMENTAL CONDITIONS: Wooden boxes 12 X 12 X 4 in. with compost growing medium as one experiment; Petri dish germination, 50 oat seeds and 100 charlock seeds for each of 4 replicates, charlock seed pre-treated in concentrated sulphuric acid for 5 min and then washed in calcium carbonate suspension and also in water to increase percent germination
EFFECTS: Box experiment--50 to 70% charlock germination reduction at 100 mg/box, 82-86% reduction at 250 mg/box, oat growth slightly retarded at 250 mg/box but effect only temporary; Petri dish experiments--root growth of charlock restricted at 50 ppm and almost nil at 200 ppm, no germination of charlock above 200 ppm, oat growth slow but plants made good recovery but showed some epinastic response; sodium salt of alpha-naphthylacetic acid--400 ppm completely inhibited germination of plantain and yarrow
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<437>
CHEMICAL NAME: Acetic acid, ar-tetrahydro-beta-naphthoxy-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity approximately equal to alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<438>
CHEMICAL NAME: Acetic acid, beta-naphthoxy-
CHEMICAL COMMON NAME: B-naphthoxyacetic acid
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect noted
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<439>
CHEMICAL NAME: Acetic acid, bromo-
CHEMICAL COMMON NAME: Bromoacetic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<440>
<440>
CHEMICAL NAME: Acetic acid, bromo-, allyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 4 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 4 at 0.1 and 1.0%, respectively
COMMENTS: A volatile, toxic, and lachrymatory compound, thus difficult to handle
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<441>
CHEMICAL NAME: Acetic acid, bromo-, butoxyethyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating rating of 2 and 4 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; tomato--injury rating of 1 and 4 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<442>
CHEMICAL NAME: Acetic acid, bromo-, sodium salt
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 4 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 4 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<443>
CHEMICAL NAME: Acetic acid, chloro-
CHEMICAL COMMON NAME: Chloracetic acid
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study: sand, waxed carton culture; temperture--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Moderate reduction of shoot emergence at 10(-2)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<444>
CHEMICAL NAME: Acetic acid, chloro-
CHEMICAL COMMON NAME: Monochloroacetic acid
PLANT: Viburnum (VIBURNUM SUSPENSUM); Hawthorn, red (CRATAEGUS sp.); Hibiscus (HIBISCUS ROSA); Holly (ILEX sp.); Spruce, white (PICEA GLAUCA); Apple (MALUS SYLVESTRIS); Peach (PRUNUS PERSICA); Rose, wild (ROSA sp.); Bean, snap (PHASEOLUS VULGARIS); Lilac (SYRINGA sp.)
EXPERIMENTAL DOSE: 0.5, 1.0 and 3.2%; acid and triethanolamine salt; 0.25% Nekal NS
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At 0.5%, defoliation of apple and peach; at 1.0%, defoliation of tea rose, viburnum, hawthorn, hibiscus, and bean with less effect on lilac and spruce, and no effect on holly; acid more damaging than salt
COMMENTS: Monochloroacetic acid and undecylenic acid at a range of 0.5 to 3.2% had defoliating properties; effectiveness depends upon species, formulation, and concentration
REFERENCE: Zimmerman, P.W., A.E. Hitchcock, and H. Kirkpatrick, "Killing of Leaves and Defoliation of Plants by Chemical Means," Proc. N.E. Weed Control Conf. 231-233 (1951).

<445>
CHEMICAL NAME: Acetic acid, chloro-
CHEMICAL COMMON NAME: Monochloroacetic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Broadleaf weeds; Grasses; Bean, snap (PHASEOLUS VULGARIS); Corn (ZEA MAYS); Gladiolus; Euonymus (EUONYMUS RADICANS); Orchid; Holly (ILEX sp.); Peach (PRUNUS PERSICA); Pine, loblolly (PINUS TAEDA); Gardenia (GARDENIA JASMINOIDES); Yew (TAXUS sp.); Carnation; Rose (ROSA sp.)
EXPERIMENTAL DOSE: 1.0%; 0.25% Nekal NS wetting agent; acid and triethanolamine salt
APPLICATION METHODS: Foliar between-row and preemergence sprays; 125 to 300 gal/A; Teejet #8015 nozzle; weeds

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sprayed to thorough wetness
EXPERIMENTAL CONDITIONS: Greenhouse/fiedl studies; controlled directional spraying of weeds avoiding crop plants except tomato (used as test plant with direct application)
EFFECTS: Killed weeds and other plants, e.g., tomato, directly sprayed but not crop plants in rows next to treatments (postemergence); no effect on crops in preemergence applications; less effective on grass weeds than broadleaf weeds
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<446>
CHEMICAL NAME: Acetic acid, chloro-
CHEMICAL COMMON NAME: Chloroacetic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<447>
CHEMICAL NAME: Acetic acid, chloro-, allyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 0 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 0 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 0 at 0.1 and 1.0%, respectively
COMMENTS: Not toxic to seedlings but effective seed-killer
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<448>
CHEMICAL NAME: Acetic acid, chloro-, amyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 2 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<449>
CHEMICAL NAME: Acetic acid, chloro-, benzyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 3 and 4 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 3 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<450>
<450>
CHEMICAL NAME: Acetic acid, chloro-, butoxyethyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 0 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 0 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<451>
CHEMICAL NAME: Acetic acid, chloro-, ethyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; millet--injury rating of 2 and 2 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 2 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<452>
CHEMICAL NAME: Acetic acid, chloro-, iso-propyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 2 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<453>
CHEMICAL NAME: Acetic acid, chloro-, isobutyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 2 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<454>
CHEMICAL NAME: Acetic acid, chloro-, methyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 2 and 4 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 4 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<455>
CHEMICAL NAME: Acetic acid, chloro-, n-butyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 2 and 4 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 2 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<456>
CHEMICAL NAME: Acetic acid, chloro-, n-propyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 2 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<457>
CHEMICAL NAME: Acetic acid, chloro-, sec-butyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 2 and 2 at 0.1 and 1.0%, respectively; millet--injury rating of 1 and 1 at 0.1 and 1.0%, respectively; tomato-injury rating of 0 and 0 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<458>
CHEMICAL NAME: Acetic acid, chloro-, sodium salt
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: No injury at 0.1%; injury rating of 2 at 1.0% for all 3 plants
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<459>
CHEMICAL NAME: Acetic acid, chloro-, sodium salt
CHEMICAL COMMON NAME: Sodium chloroacetate
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<460>
CHEMICAL NAME: Acetic acid, chloro-, sodium salt
CHEMICAL COMMON NAME: Sodium MCA
PLANT: Chou moellier (BRASSICA); Swedes; Turnip (BRASSICA RAPA); Pea, sweet (PISUM SATIVUM); Wartcress (CORONOPUS DIDYMUS); Spurrey, corn (SPERGULA ARVENSIS); Ladysthumb (POLYGONUM PERSICARIA); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Nightshade, black (SOLANUM NIGRUM); Grasses; Beet, fodder (BETA sp.)
EXPERIMENTAL DOSE: 10, 15, 20, and 20 lb/A
APPLICATION METHODS: Postemergence spray at 30 lb pressure and 30 gpa
EXPERIMENTAL CONDITIONS: Sandy loam soil; 5 or 6 ft wide and 14 to 24 ft long plots; randomized block design; 4 to 6 replications; field trials
EFFECTS: Chou moellier--risk of damage if sprayed before 4-leaf stage; swedes--20 lb/A at 5 to 6 leaf stage burned leaves but good recovery made; turnips--15 lb/A caused severe damage at 2 to 3 leaf stage, less damage if plant older; peas--15 lb/A at 3 to 6 node stage very promising for weed control; beet--severely affected at 2 to 3 leaf stage at 15 lb/A; good control of ladysthumb, pigweed, spurrey and nightshade; poor to moderate cress control; lamb's-quarters and grass weeds resistant
COMMENTS: Nightshade resisted 15 lb/A in thick infestation area when 2 in. high and resisted 20 lb/A when larger
REFERENCE: Thompson, F.B., "Weed Control in Fodder Crops with Monochloracetate," Proc. N. Z. Weed Control Conf. 12:99-105 (1959).

<461>
<461>
CHEMICAL NAME: Acetic acid, cyano-
CHEMICAL COMMON NAME: Cyanoacetic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 3.2%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<462>
CHEMICAL NAME: Acetic acid, dichloro-
CHEMICAL COMMON NAME: Dichloroacetic acid
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland')
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperture--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Slight reduction of shoot emergence at 10(-2)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.P. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<463>
CHEMICAL NAME: Acetic acid, dichloro-
CHEMICAL COMMON NAME: Dichloroacetic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 3.2%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<464>
CHEMICAL NAME: Acetic acid, ethoxythiocarbonylthio-, s-ethylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<465>
CHEMICAL NAME: Acetic acid, ethoxythiocarbonylthio-, s-methylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salt increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<466>
CHEMICAL NAME: Acetic acid, ethoxythiocarbonylthio-, sodium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkyllisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<467>
CHEMICAL NAME: Acetic acid, ethoxythiocarbonylthio-, 1-s-n-amylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<468>
CHEMICAL NAME: Acetic acid, ethoxythiocarbonylthio-, 1-s-n-butylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<469>
CHEMICAL NAME: Acetic acid, ethoxythiocarbonylthio-, 1-s-n-heptylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<470>
CHEMICAL NAME: Acetic acid, ethoxythiocarbonylthio-, 1-s-n-hexylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salt increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<471>
<471>
CHEMICAL NAME: Acetic acid, ethoxythiocarbonylthio-, 1-s-propylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<472>
CHEMICAL NAME: Acetic acid, hydrazide
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: 5 ml solution added to germinating seed in Petri dish
EXPERIMENTAL CONDITIONS: Seeds germinated then transferred to Petri dish; treatment solution added, root growth observed
EFFECTS: Box test--no data; pot test--no data; Petri dish test--92, 85, and 80% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<473>
CHEMICAL NAME: Acetic acid, Iodo-
CHEMICAL COMMON NAME: Iodoacetic acid
PLANT: Oat, wild (AVENA FATUA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 4 X 10(-5) and 6 X 10(-4) M
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; oat and pea coleoptile assays
EFFECTS: Inhibited growth
COMMENTS: Arsenite, parachloromercuribenzoate, and phenylmercuric salts inhibited growth; inhibitions differed from those caused by iodoacetate in that they were not prevented or reversed by malate or other organic acids; difference ascribed to greater affinity of enzyme for these substances than for iodoacetate
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. II. The Action of Several Enzyme Inhibitors on the Growth of the AVENA Coleoptile and on PISUM Internodes," Am. J. Bot. 36:214-221 (1949).

<474>
CHEMICAL NAME: Acetic acid, Iodo-
CHEMICAL COMMON NAME: Iodoacetate
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 5x10(-5) to 2x10(-5) M
APPLICATION METHODS: Submersion of oat coleoptiles
EXPERIMENTAL CONDITIONS: Laboratory study; oat coleoptile assay--increased or inhibited growth of 3mm sections in solutions containing sucrose, IAA, and experimental compounds; coleoptile age--66-69 hr (and at other times)
EFFECTS: Inhibited growth of coleoptile sections age 72-76 hr but no effect at age 66-69 hr
COMMENTS: Most organic acids accelerated growth in absence of inhibitor but in presence of auxin and sucrose or auxin alone, inhibition of growth by low concentrations of iodoacetate and reversal of inhibition by certain organic acids; sensitivity of sections both to inhibitor and to growth promoting effect of the acids varied with age of the plants; lowest concentration causing definite inhibition steadily decreased with increasing age
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. I. The Action of Iodoacetate and Organic Acids on the AVENA Coleoptile," Am. J. Bot. 35:271-281 (1948).

<475>
CHEMICAL NAME: Acetic acid, Iodo-
CHEMICAL COMMON NAME: Iodoacetic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<476>
CHEMICAL NAME: Acetic acid, iodo-, allyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 4 of 0.1 and 1.0%, respectively; millet--injury rating of 1 and 2 at 0.1 and 1.0%, respectively; tomato-injury rating of 1 and 4 at 0.1 and 1.0%, respectively
COMMENTS: A volatile, toxic, and lachrymatory compound, thus difficult to handle
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<477>
CHEMICAL NAME: Acetic acid, iodo-, benzyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 4 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; tomato--injury rating at 0 and 4 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<478>
CHEMICAL NAME: Acetic acid, iodo-, butoxyethyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 4 at 0.1 and 1.0%, respectively; millet--injury rating of 1 and 2 at 0.1 and 1.0%, respectively; tomato--injury rating of 1 and 4 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<479>
CHEMICAL NAME: Acetic acid, iodo-, sodium salt
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 4 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 4 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<480>
CHEMICAL NAME: Acetic acid, methoxythiocarbonylthio-, s-ethylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<481>
CHEMICAL NAME: Acetic acid, methoxythiocarbonylthio-, s-methylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by

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<481> CONT.
s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<482>
CHEMICAL NAME: Acetic acid, methoxythiocarbonylthio-, sodium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<483>
CHEMICAL NAME: Acetic acid, methoxythiocarbonylthio-, 1-s-n-amylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<484>
CHEMICAL NAME: Acetic acid, methoxythiocarbonylthio-, 1-s-n-butylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<485>
CHEMICAL NAME: Acetic acid, methoxythiocarbonylthio-, 1-s-n-heptylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salt increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<486>
CHEMICAL NAME: Acetic acid, methoxythiocarbonylthio-, 1-s-propylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by

<486> CONT.
s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<487>
CHEMICAL NAME: Acetic acid, n-butoxythiocarbonylthio-, s-ethylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<488>
CHEMICAL NAME: Acetic acid, n-butoxythiocarbonylthio-, s-methylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by S-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<489>
CHEMICAL NAME: Acetic acid, n-butoxythiocarbonylthio-, sodium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by S-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<490>
CHEMICAL NAME: Acetic acid, n-butoxythiocarbonylthio-, 1-s-n-amylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<491>
CHEMICAL NAME: Acetic acid, n-butoxythiocarbonylthio-, 1-s-n-butylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by

<491>
<491> CONT.
s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<492>
CHEMICAL NAME: Acetic acid, n-butoxythiocarbonylthio-, 1-s-n-heptylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salt increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<493>
CHEMICAL NAME: Acetic acid, n-butoxythiocarbonylthio-, 1-s-n-hexylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salt increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<494>
CHEMICAL NAME: Acetic acid, n-butoxythiocarbonylthio-, 1-s-propylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<495>
CHEMICAL NAME: Acetic acid, n-pentoxythiocarbonylthio-, s-ethylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<496>
CHEMICAL NAME: Acetic acid, n-pentoxythiocarbonylthio-, s-methylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by

<496> CONT.
s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<497>
CHEMICAL NAME: Acetic acid, n-pentoxythiocarbonylthio-, sodium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<498>
CHEMICAL NAME: Acetic acid, n-pentoxythiocarbonylthio-, 1-s-n-amylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<499>
CHEMICAL NAME: Acetic acid, n-pentoxythiocarbonylthio-, 1-s-n-butylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<500>
CHEMICAL NAME: Acetic acid, n-pentoxythiocarbonylthio-, 1-s-n-heptylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salt increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<501>
CHEMICAL NAME: Acetic acid, n-pentoxythiocarbonylthio-, 1-s-n-hexylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salt increased as o-alkyl chain got longer; when sodium replaced by

<501>
<501> CONT.
s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<502>
CHEMICAL NAME: Acetic acid, n-pentoxythiocarbonylthio-, 1-s-propylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<503>
CHEMICAL NAME: Acetic acid, n-propoxythiocarbonylthio-, s-ethylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<504>
CHEMICAL NAME: Acetic acid, n-propoxythiocarbonylthio-, sodium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouroniumcation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<505>
CHEMICAL NAME: Acetic acid, n-propoxythiocarbonylthio-, 1-s-n-amylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<506>
CHEMICAL NAME: Acetic acid, n-propoxythiocarbonylthio-, 1-s-n-butylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by

<506> CONT.
s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<507>
CHEMICAL NAME: Acetic acid, n-propoxythiocarbonylthio-, 1-s-n-heptylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salt increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<508>
CHEMICAL NAME: Acetic acid, n-propoxythiocarbonylthio-, 1-s-n-hexylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salt increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<509>
CHEMICAL NAME: Acetic acid, n-propoxythiocarbonylthio-, 1-s-propylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<510>
CHEMICAL NAME: Acetic acid, n-propoxythiocarbonylthio, s-methylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.001, 0.0013, 0.002, 0.004, 0.008, and 0.02 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; studied according to Principle of Covalent-Electrovalent Organic Molecule
EFFECTS: Root and shoot toxicity with resultant growth reduction
COMMENTS: Toxicity of sodium salts increased as o-alkyl chain got longer; when sodium replaced by s-alkylisothiouronium cation, toxicity increased considerably; the longer the s-alkyl and the o-alkyl chains, the more toxic the compound; all results recorded photographically
REFERENCE: El-Nawawy, A.S. and A.N. Abu-khatwa, "Relation Between Chemical Structure and Biological Activity Part 26. Phytocidal Properties of Sodium and Thirty-Five S-Alkylisothiouronium Salts of Five Alkoxythiocarbonylthioacetic Acids," Alexandria J. Agric. Res. 15(2):373-379 (1967).

<511>
CHEMICAL NAME: Acetic acid, phenoxy-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Some inhibition of charlock germination (percent inhibition not given); little or no effect on oat

<511>
<511> CONT.
growth or germination
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<512>
CHEMICAL NAME: Acetic acid, phenoxy-
PLANT: Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 40 mg of lanolin preparation (1% experimental compound)
APPLICATION METHODS: Applied directly to primary leaf pulvinus
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No effect noted
COMMENTS: 4-chlorophenoxyacetic acid very active as was 4-chlorophenyl ester; slight effect noted within two days after application; within ten days stems badly swollen and trifoliate leaves dwarfed
REFERENCE: Kalinowski, M.L. and L.W. Kalinowski, "Cyclization of Phenoxyacetic Acid and Some Chlorophenoxyacetic Acids," J. Chem. Soc. 70:1970-1971 (1948).

<513>
CHEMICAL NAME: Acetic acid, phenyl-
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 50 ppm
EXPERIMENTAL CONDITIONS: Isolated from decomposing plant matter
EFFECTS: Inhibition of seedling root elongation
COMMENTS: Phytotoxin production and analysis--main emphasis of paper
REFERENCE: Toussoun, T.A., A.R. Weinhold, R.G. Linderman, and Z.A. Patrick, "Nature of Phytotoxic Substances Produced during Plant Residue Decomposition in Soil," Phytopathol. 58:41-45 (1968).

<514>
CHEMICAL NAME: Acetic acid, pyridinyl- mercury salt
PLANT: Crabgrass (DIGITARIA sp.); Bentgrass, creeping (AGROSTIS PALUSTRIS); Bentgrass, Rhode Island (AGROSTIS TENUIS)
EXPERIMENTAL DOSE: 1:10,000; 10 gal/1000 sq ft; applied 10 day intervals
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight crabgrass control with no adverse effect on grasses of golf putting green
COMMENTS: Puraturf and Puratized 806, gave good control of crabgrass; twenty-two different treatments used but most had no appreciable effect on crabgrass
REFERENCE: DeFrance, J.A., "Water-Soluble Mercurials for Crabgrass Control in Turf," Greenkeepers' Rept. 15(1):30-31 (1947).

<515>
CHEMICAL NAME: Acetic acid, trichloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--abnormal wheat growth but only slightly abnormal cabbage growth; Petri dish test--100, 102, and 94% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<516>
CHEMICAL NAME: Acetic acid, trichloro-, ammonium salt
CHEMICAL COMMON NAME: Ammonium trichloracetate
PLANT: Johnson grass (SORGHUM HALEPENSE); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 27 and 218 lb/A
APPLICATION METHODS: Postemergence spray; 30 and 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective Johnsongrass and Bermuda grass control
COMMENTS: Good control of Johnson grass obtained with ATA at rates of 218 lb or higher; kill with 109 lb per acre varied from 90 to 100 per cent in various tests and was comparable to 436 lb application of Atlacide
REFERENCE: Ryker, T.C., "Preliminary Tests With Ammonium Trichloroacetate as a Herbicide," Sugar J. New Orleans 10(11) (1948).

<517>
CHEMICAL NAME: Acetic acid, trichloro-, benzyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rate of 0 and 2 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 2 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<518>
CHEMICAL NAME: Acetic acid, trichloro-, butoxyethyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 0 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 2 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<519>
CHEMICAL NAME: Acetic acid, trichloro-, calcium salt, mixt. with iron(3+) salt
CHEMICAL COMMON NAME: M-15
PLANT: Bermudagrass, common (CYNODON DACTYLON); Clover, Egyptian (TRIFOLIUM ALEXANDRINUM)
EXPERIMENTAL DOSE: 10 to 100 kg/A
APPLICATION METHODS: Preplant spray for clover; postemergence spray for bermudagrass; abrasive added
EXPERIMENTAL CONDITIONS: Field study; irrigated desert conditions
EFFECTS: At 20-25 kg/A, slight damate to clover and effective control of bermudagrass for up to 45 days
COMMENTS: Suitable for bermudagrass control if applied 3-4 weeks before sowing clover; overall spray only slightly phytotoxic when applied immediately before sowing; plants recovered from slight effect within 3 months
REFERENCE: Gad, A.M., M.A.M. El-Mahdi, and M.S. El-Hakeem, "Bermuda Grass Control in Clover Plantings With the Local Herbicide M 15," A.R.E. J. Desert Inst. 21(2):487-497 (1971).

<520>
CHEMICAL NAME: Acetic acid, trichloro-, calcium salt, mixt. with iron(3+) salt
CHEMICAL COMMON NAME: M-15
PLANT: Bermudagrass, common (CYNODON DACTYLON); Cotton (GOSSYPIUM HIRSUTUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Jews-mallow (CORCHORUS OLITORIUS)
EXPERIMENTAL DOSE: 10 to 100 kg/A
APPLICATION METHODS: Postemergence spray to runoff (bermudagrass) and preemergence spray (cotton and annual weeds)
EXPERIMENTAL CONDITIONS: Field study; irrigated desert conditions
EFFECTS: Effective control of bermudagrass at 50 to 100 kg/A in 3 to 5 days; effective control of barnyardgrass and slight control of mallow with no adverse effect on cotton at 40 lb/A
COMMENTS: Controlled bermuda grass well using any one of three tested rates; no regrowth noticed for 10 months
REFERENCE: Gad, A.M. and M.A.M. El-Mahdi, "Effect of the Local Herbicide M 15 in Controlling Bermuda Grass and Certain Annual Weeds in Cotton Plantings," A.R.E. J. Desert Inst. 21(2):499-510 (1971).

<521>
CHEMICAL NAME: Acetic acid, trichloro-, calcium salt, mixt. with iron(3+) salt
CHEMICAL COMMON NAME: M-15
PLANT: Darnel, poison (LOLIUM TEMULENTUM); Tomato (LYCOPERSICON ESCULENTUM); Onion (ALLIUM CEPA); Pea, sweet (PISUM SATIVUM); Pea, cow- (VIGNA SINENSIS); Bean, snap (PHASEOLUS VULGARIS); Cauliflower (BRASSICA OLERACEA); Cabbage (BRASSICA OLERACEA); Turnip (BRASSICA RAPA); Radish (RAPHANUS SATIVUS); Rocket, garden (ERUCA SATIVA); Bean, broad (VICIA FABA); Flax (LINUM USITATISSIMUM); Lentil (LENS ESCULENTUM); Lupine (LUPINUS TERMIS); Chickpea (CICER ARIETINUM); Fenugreek (TRIGONELLA FOENUMGRAECUM); Sunflower (HELIANTHUS ANNUUS); Barley (HORDEUM VULGARE); Wheat (TRITICUM AESTIVUM); Clover, Egyptian (TRIFOLIUM ALEXANDRINUM); Spinach (SPINACIA OLERACEA); Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 10 to 160 kb/1.04A (F)
APPLICATION METHODS: Addition to soil prior to planting
EXPERIMENTAL CONDITIONS: Container culture
EFFECTS: Highly varied
COMMENTS: Menoufi cotton tolerated M-15/F when soil incorporated; pepper, watermelon, sesame, cucumber and squash tolerated 80, 80, 20, 20 and 20 kg/F, respectively, by applying the herbicide to soil surface
REFERENCE: Gad, A.M. and M.A.M. El-Mahdi, "Effectiveness of the Local Herbicide M-15 and Its Residues on Darnel and Some Vegetable and Field Crops," Desert Inst. Bull. 22(2):407-417 (1972).

<522>
<522>
CHEMICAL NAME: Acetic acid, trichloro-, compd. with N'-(4-chlorophenyl)-N,N-dimethylurea (1:1)
CHEMICAL COMMON NAME: Monuron TCA
PLANT: Plants
EXPERIMENTAL DOSE: 12.5 lb/ft mi (ft mi x 8.25= lb/A); G
APPLICATION METHODS: Broadcast over entire roadbed prior to asphalt laying
EXPERIMENTAL CONDITIONS: Field study; applied to road shoulders just prior to laying asphalt
EFFECTS: Effective control of weeds
COMMENTS: Herbicides useful in reducing cost of maintaining asphalt pavements; presurface application can be expected to give adequate vegetation control at least during season of treatment; post-surface applications required later to prevent encroachment by Bermudagrass from adjacent unpaved areas
REFERENCE: Pruett, L.J. and W.G. McCully, "Presurface Applications of Herbicides for Highways," Down to Earth 17(3):11-12 (1961).

<523>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.28, 0.56, 0.84, 1.12, 1.68, and 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 28 gal/A; 30 psi; spray applied at emergence and at 2.0, 2.5, or 3.5 leaf stages of growth
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--sandy loam, clay, or clay/loam/ peat moss; evaluation time--4 wk; soil moisture--15.5%; temperature--17,22, and 27 C; light intensity--2750, 8250, and 19, 250 lux; 16 hr photoperiod; growth chamber for temperature and light studies
EFFECTS: Effects lessened by increased light and increased temperature; source of seeds important; seedhead production curtailed at 0.56 kg/ha rate; growth effectively controlled at 0.84 kg/ha rate
COMMENTS: Green foxtail control varied or failed partly because of untimely application and partly due to undesirable climatic conditions
REFERENCE: Chow, P.N.P., "Factors Affecting the Herbicidal Activity of TCA on Green Foxtail," Weed Sci. 20(2):172-175 (1972).

<524>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Couchgrass(AGROPYRON REPENS); Velvetgrass, slender (HOLCHUS MOLLIS); Bentgrass, black (AGROSTIS GIGANTEA)
EXPERIMENTAL DOSE: 0.5 to 20.0 mg/l. of soil
APPLICATION METHODS: Addition to soil surface and watered
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--18 to 28 C; photoperiod--18 hr; fluorescent tube supplemental light; soil--mixed sandy (80%) and organic (20%)
EFFECTS: At early stage only, 5 mg/l. strongly suppresses development of primary shoots from rhizomes; ED(50)/reduction of shoots ranged from 0.9 to 5.4 mg/l. for clones (5 each) of all three species
COMMENTS: AGROPYRON REPENS, HOLEUS MOLLIS and AGROSTIS GIGANTEA much more susceptible to TCA applied to soil at early developmental stages than to TCA applied later; in glasshouse, only small differences in response to TCA found between species; these differences overshadowed by differences in effect on clones within different species; aminotriazole showed much better effect on A. REPENS than on A. GIGANTEA; effect on H. MOLLIS was intermediate
REFERENCE: Bengt, W., "Effects of TCA and Aminotriazole on AGROPYRON REPENS (L.) Beauv., HOLCUS MOLLIS L. and AGROSTIS GIGANTES Roth," Swed. J. Agric. Res. 6:121-130 (1976).

<525>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 3 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<526>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, 10(-4)M, and 10(-5)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments has been planted; solution was also nutrient (Hoaglands's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-2) and 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<527>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Plants
EXPERIMENTAL DOSE: 100 to 200 lb/A; ester, acid, and sodium salt
APPLICATION METHODS: Postemergence spray; two applications
EXPERIMENTAL CONDITIONS: Field study, road cracks and road right-of-way
EFFECTS: Effective weed control for 12 mos
COMMENTS: Initial postpaving treatment made with beginning of growth in spring; TCA applied at rate of 24 lb/ft-mile, and subsequent applications made as needed; treatment interval about 30 days
REFERENCE: McCully, W. G., W. J. Bowmer, and A. F. Wiese, "Control of Grasses and Weeds Growing in Asphalt Pavements," PANS 16(3):497-504 (1970).

<528>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Cogongrass (IMPERATA CYLINDRICA)
EXPERIMENTAL DOSE: 56 and 112 kg/ha
APPLICATION METHODS: Postemergence spray; 300 l./ha; 0.5% surfactant
EXPERIMENTAL CONDITIONS: Field study; pure cogongrass stands in near-dormant state; time period--1971 and 1972
EFFECTS: Effective control at higher rate; moderate control at lower rate; regrowth after one year
COMMENTS: All soil sterilants provided acceptable control; single applications of TCA and dalapon controlled cogongrass without prolonged soil sterility
REFERENCE: Dickens, R. and G.A. Buchanan, "Control of Cogongrass with Herbicides," Weed Sci. 23(3):194-197 (1975).

<529>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Iceplant (CARPOBROTUS EDULE); Wheat (TRITICUM AESTIVUM); Foxtail, green (SETARIA VIRIDIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 0.56-1.68 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; pH-7.5; time period--1963 to 1970
EFFECTS: Moderate control of weeds with varied varietal wheat response
COMMENTS: Of the seven cultivars, Pitic 62 and Stewart most susceptible to injury from TCA; all other cultivars were tolerant to 0.56 kg/ha
REFERENCE: Chow, P.N. and R.D. Dryden, "Wheat Tolerance to TCA (Trichloroacetic Acid) for Green Foxtail Control," Weed Sci. 21(3):238-241 (1973).

<530>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Bromegrass, downy (BROMUS TECTORUM); Wheatgrass, intermediate (AGROPYRON INTERMEDIUM)
EXPERIMENTAL DOSE: 6.0 to 18.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 or 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; 2 locations in WA; time period--1958 to 1960
EFFECTS: At 12.0 and 18.0 lb rates, effective control of downy brome for 1 to 2 yr but moderate damage of wheatgrass
COMMENTS: IPC and CIPC most effective herbicides for controlling downy brome without serious injury to perennial grasses grown for seed production; endothal gave good downy brome control
REFERENCE: Canode, C.L., W.C. Robocker, and T.J. Muzik, "Grass Seed Production as Influenced by Chemical Control of Downy Brome," Weeds 10(3):216-219 (1962).

<531>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 5.0 and 10.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate weed control but reduced castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<532>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Grasses; Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 5.0 and 7.0 lb/A
APPLICATION METHODS: Postemergence spray; 40 gal/A at 38 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sharpsburg silty clay loam; time period--1954 to 1956; sprayed at emergence or one and four weeks after emergence
EFFECTS: Effective control of grass weeds at both rates with slight adverse effect on alfalfa at the 7.0 lb rate only
COMMENTS: TCA and dalapon gave very good results in all 3 years when applied 1 week after emergence of

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<532> CONT.
alfalfa; 2,2,3-TPA material appeared somewhat less active, requiring about twice as heavy a rate of application as dalapon to achieve comparable results; dalapon and TCA gave evidence of temporary injury to alfalfa, but resulted in little or no stand reduction
REFERENCE: McCarthy, M.K. and P.F. Sand, "Chemical Weed Control in Seedling Alfalfa. I. Control of Weedy Grasses," Weeds 6(2):152-160 (1958).

<533>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Plants
EXPERIMENTAL DOSE: 12.5 lb/ft mi (ft mi X 8.25= lb/A); sodium salt
APPLICATION METHODS: Spray with asphalt nozzles
EXPERIMENTAL CONDITIONS: Field study; applied to road shoulders just prior to laying asphalt
EFFECTS: Effective control of weeds
COMMENTS: Herbicides useful in reducing cost of maintaining asphalt pavements; presurface application can be expected to give adequate vegetation control at least during season of treatment; post-surface applications required later to prevent encroachment by Bermudagrass from adjacent unpaved areas
REFERENCE: Pruett, L.J. and W.G. McCully, "Presurface Applications of Herbicides for Highways," Down to Earth 17(3):11-12 (1961).

<534>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Hyacinth, water (EICHHORNIA HASTAEFOLIA)
EXPERIMENTAL DOSE: 2.5 kg/ha
APPLICATION METHODS: Addition to water
EXPERIMENTAL CONDITIONS: Field study; evaluation time--2 and 6 wk
EFFECTS: No hyacinth control
COMMENTS: Complete control of water hyacinth obtained with diquat and paraquat with no further regeneration; partial control obtained with cyanazine and 2,4-D while TCA proved non-effective against water hyacinth
REFERENCE: Patro, G.K. and G.C. Tosh, "Studies on Control of Water Hyacinth (EICHHORNIA CRASSIPES) by Herbicides," Andhra Agric. J. 18(4):139-143 (1971).

<535>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 12 to 25 lb/A, sodium salt
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control at highest rates with moderate regrowth (3 mo)
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<536>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 10.0 and 30.0 ppm
APPLICATION METHODS: Addition to culture solution
EXPERIMENTAL CONDITIONS: Environmental chamber; hydroponic culture; whole roots or one-third of roots immersed in test solutions; pH--7.0; temperature--16 to 23 C; RH--50 to 70%; photoperiod--12 hr
EFFECTS: Growth retardation and growth distortion
COMMENTS: Propham, chlorpropham, atratone and 2,3,6-TBA killed plants whether application was to one-third or all roots; roots in direct contact with propham, chlorpropham and 2,3,6-TBA deformed or killed, while roots in uncontaminated solution remained healthy; atratone and chlorpropham transmitted to roots not in toxic solution
REFERENCE: Lyndsay, R.V. and G.S. Hartley, "Studies of the Response of Plants to Root-Applied Herbicides," Weed Res. 3(3):195-204 (1963).

<537>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.4 to 819.2 ppmw (of soil)
APPLICATION METHODS: Added to soil in water solutions
EXPERIMENTAL CONDITIONS: Greenhouse study; soils--Yolo fine sandy loam, Yolo clay loam, and Egbert loam; persistence studied in container culture in which oats indicator plant was planted, harvested, replanted, etc on 4 to 8 wk cycle
EFFECTS: At 6.4 ppmw and higher concentrations, herbicide persisted for 2 or 3 crop cycles
COMMENTS: Initial toxicity in order of decreasing toxicity was: fenuron and monuron, CIPC, dalapon and TCA, CMIPC, and TBA; comparative inactivation in order of most rapid to slowest inactivation, was; TCA, dalapon, CIPC, CMIPC, TBA, fenuron, and monuron
REFERENCE: Crafts, A.S. and H. Drever, "Experiments with Herbicides in Soils," Weeds 8(1):12-18 (1960).

<538>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Clover (TRIFOLIUM sp.); NASSELLA TUSSOCK; Cocksfoot; Clover, white (TRIFOLIUM REPENS); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 10 and 20 lb/A
APPLICATION METHODS: Foliar spray; 25 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective tussock control with no adverse effect on clover, ryegrass, and cocksfoot
COMMENTS: Nucleus area of nassella tussock practically killed completely by TCA followed by over-sowing of grasses and clovers; kill of old tussock and establishment of pasture excellent; evidence of gradual reversion to tussock as result of re-establishment from seed
REFERENCE: Beggs, J.P. and W.F. Leonard, "Nassella Tussock Control: Preventing Reversion," New Zealand J. Agric. 97:211 (1958).

<539>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Beet, sugar (BETA VULGARIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, green (SETARIA VIRIDIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PENSYLVANICUM); Buckwheat, wild (POLYGONUM CONVOLVULUS); Mustard, wild (BRASSICA KABER); Stinkweed (THLASPI ARVENSE)
EXPERIMENTAL DOSE: 8 lb/A
APPLICATION METHODS: Preemergence and postemergence
EXPERIMENTAL CONDITIONS: 12 treatments per trial, each trial replicated 8 times; 4 row wide plots, 50 ft. long--row 1 was untreated check, row 2 had herbicide plus hand weeding, row 3 received preemergence TCA at 8 lb/A and row 4 was same as row 2 except delayed hand weeding; visual ratings
EFFECTS: Poor to moderate foxtail control; excellent control of other weed species; no sugar beet injury
COMMENTS: Postemergence and preemergence treatments equally effective
REFERENCE: Klassen, M. and G. Guccione, "Evaluation of Herbicides for Weed Control in Sugarbeets in Manitoba," J. Amer. Soc. Sugar Beet. Technol. 16(7):553-560 (1971).

<540>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Bamboo (BAMBUSA ARUNDINACEA); Bamboo (BAMBUSA TEXTILIS); Bamboo (BAMBUSA TULDA); Bamboo, common (BAMBUSA VULGARIS); Bamboo (DENDROCALAMUS ASPER); Bamboo, solid (DENDROCALAMUS STRICTUS); Bamboo (GIGANTOCHLOA APUS); Bamboo, running type (PHYLLOSTACHYS BAMBUSOIDES); Bamboo (PHYLLOSTACHYS MEYERI); Bamboo (SINOCALAMOUS OLDHAMI)
EXPERIMENTAL DOSE: 0.4 to 1.6 lb/50 culms; 0.05% Tween-20
APPLICATION METHODS: Basal watering or foliage spray; 2 gal/50 culms
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No effect on some species, kill of others, and varied effects between
COMMENTS: Most effective treatments monuron, TCA, and dalapon to bases of intact or cut bamboo culms and amitrole as spray to regrowth foliage; combinations of herbicides found most effective on common bamboo, B. VULGARIS; for highly resistant species, second treatment necessary
REFERENCE: Cruzado, H.J., T.J. Muzik, and W.C. Kennard, "Control of Bamboo in Puerto Rico by Herbicides," Weeds 9(1):20-26 (1961).

<541>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Broadleaf weeds; Beet, sugar (BETA VULGARIS)
APPLICATION METHODS: Pre-plant incorporated, preemergence, or postemergence sprays; 280 l./ha at 2 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1972 and 1973
EFFECTS: Slight weed control with reduced yield of beet
COMMENTS: Broadleaf weed control achieved in table beets with cycloate, CNP, pebulate, lenacil, pyrazon, IMC 3950, TCA + pyrazon, and pebulate followed by pyrazone; fair weed control achieved with EPTC, propachlor, and solubor; poor weed control obtained from CDEC, chlorpropham, pyrazon, and TCA; yields expressed as $/ha or tons/ha reduced by chlorpropham, lenacil, CNP, and TCA
REFERENCE: Phatak, S.C. and D.J. Cantliffe, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Table Beets," Hortsci. 10(3):271-273 (1975).

<542>
CHEMICAL NAME: Acetic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: TCA
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 2.96 to 3.20 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

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CHEMICAL NAME: Acetic acid, trichloro-, tetrahydrofurfuryl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 0 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 1 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<544>
CHEMICAL NAME: Acetic acid, trichloro-, 10n(1-)
CHEMICAL COMMON NAME: TCA, ammonium salt
PLANT: Raspberry (RUBUS IDAEUS); Strawberry (FRAGARIA sp.); Quackgrass (AGROPYRON REPENS); Bean, kidney (PHASEOLUS VULGARIS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 500, 1000, 1500, and 2000 ppm; 1g/500 ml
APPLICATION METHODS: Treatments at various plant growth periods
EXPERIMENTAL CONDITIONS: Greenhouse tests; dormant and foliage raspberry treatments; residual kidney bean growth test
EFFECTS: Good control of quackgrass and bluegrass at 1g/500 ml, best results with young plants; 1500 ppm dormant and 1000 ppm foliage raspberry treatments caused some foliar damage but growth not appreciably altered, application to dormant plants caused less damage; strawberry plants killed and grasses severely injured at 500, 1000, and 1500 ppm; 1000 and 2000 ppm toxic to kidney beans up to 50 days after treatment
COMMENTS: 500, 1000, and 1500 ppm concentrations approximately equivalent to 20, 40, and 60 lb/A, respectively
REFERENCE: Carlson, R.F. and J.E. Moulton, "Use of the Ammonium Salt of Trichloroacetate, the Sodium Salt of Trichloroacetate, Ammonium Thiocyanate, and Herbicide "PB", in the Eradication of Grasses, and the Effect of These Chemicals on Strawberry and Raspberry Plants," Mich. Agric. Exp. Stn. Q. Bull. 30:413-421(1948).

<545>
CHEMICAL NAME: Acetic acid, 1-chloro-2-naphthoxy-, sodium salt
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Some inhibition of charlock germination (percent inhibition not given); little or no effect on oat growth or germination
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<546>
CHEMICAL NAME: Acetic acid, 2-chloro-hydrazide
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--normal growth; Petri dish test--97, 62, and 50% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<547>
CHEMICAL NAME: Acetic acid, 2-chloro-1-naphthoxy-, sodium salt
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A.
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Some inhibition of charlock germination (percent inhibition not given); little or no effect on oat growth or germination
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<548>
CHEMICAL NAME: Acetic acid, 2-methyl-3-oxocyclohexyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent germination, 0
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<549>
CHEMICAL NAME: Acetic acid, 2-methyl-3-oxocyclohexyl-, methyl ester
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 83; percent germination, 10
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<550>
CHEMICAL NAME: Acetic acid, 2-methyl-3-oxocyclopentyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 59; percent germination, 50
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<551>
CHEMICAL NAME: Acetic acid, 2-methyl-3-oxocyclopentyl-, methyl ester
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 59; percent germination, 30
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<552>
CHEMICAL NAME: Acetic acid, 2-octyl-3-oxocyclopentyl-, methyl ester
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 79; percent germination, 20
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<553>
CHEMICAL NAME: Acetic acid, 2-pentyl-3-oxocyclopentyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 83; percent germination, 50
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<554>
<554>
CHEMICAL NAME: Acetic acid, 2-pentyl-3-oxocyclopentyl-, methyl ester
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 93; percent germination, 70
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<555>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-
CHEMICAL COMMON NAME: 2,4-D
PLANT: Thistle, Canada (CIRSIUM ARVENSE)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Postemergence Spray
EXPERIMENTAL CONDITIONS: Environmental chamber; photoperiod--16 hr; temperatures--25C (day) and 21C (night); RH--70%; 7 ecotypes of Canada thistle studied
EFFECTS: Considerable leaf damage but relatively little observable damage to roots although at 27 C there was considerable dry weight reduction of roots compared to plants grown at 16 and 21 C; ecotypic response was extremely varied
COMMENTS: 2,4-D and dicamba caused considerable disruption of Canada thistle leaf tissue, but caused little or no visible injury to root tissue; picloram, which caused little injury to leaf tissue was rapidly translocated into root and caused complete distruction.and caused complete distruction.
REFERENCE: Hunter, J.H. and L.W. Smith, "Environment and Herbicide Effects on Canada Thistle Ecotypes," Weed Sci. 20(2):163-166 (1972).

<556>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, hexadecyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Weak herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<557>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, methyl ester
CHEMICAL COMMON NAME: 2,4-D, methyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Very strong herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<558>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, p-hydroxymethylphenyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Very strong herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<559>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, phenylmethyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Weak herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<560>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, phenylthio ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Very strong herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<561>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Strong herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<562>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, 2-methoxy-4-(2-propenyl)-phenyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Strong herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<563>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, 2-methyl-4,6-dibromophenyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Weak herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<564>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, 2-methylphenylthio ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Strong herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<565>
<565>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, 3-methyl-4-chloro-2-nitrophenyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Very strong herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<566>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, 3-methyl-4-chlorophenyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Weak herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<567>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, 4-acetophenyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Weak to moderate herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<568>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, 4-chloro-o-hydroxymethylphenyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Very strong herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<569>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, 4-hydroxy-3-methoxyphenyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Moderate herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<570>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, 4-methylphenylthio ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Moderate herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<571>
CHEMICAL NAME: Acetic acid, 2,4-dichlorophenoxy-, 4-nitrophenyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Moderate herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<572>
CHEMICAL NAME: Acetic acid, 2,4,-dichlorophenoxy-, 2-methyl-5-(1-methylethyl)phenyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: Seeds soaked in test solution
EXPERIMENTAL CONDITIONS: Seeds of field crops soaked for 4 hr, seeds of vegetable crops soaked for 12 hr; seeds removed, dried, and planted in sand; plants harvested after 2 wk in greenhouse; number of germinated seeds, total fresh weight, and height of seedling compared with untreated control
EFFECTS: Weak herbicidal activity
COMMENTS: No specific plants named; herbicidal activity expressed in relative terms
REFERENCE: Wagner, C.R., C.L. Hamner, and H.M. Sell, "Some New Esters of 2,4-Dichlorophenoxyacetic Acid and their Herbicidal Activity," J. Am. Chem. Soc. 75:4861-4862 (1953).

<573>
CHEMICAL NAME: Acetic acid, 2,6-dichlorophenyl-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: 10(-4) M extremely toxic to all plants except ryegrass, moderately toxic to ryegrass; 10(-5) M strongly toxic to clover, alfalfa, and mustard, moderately toxic to tomatoes, minor toxicity to ryegrass and pigweed; minor or no phytotoxicity at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<574>
CHEMICAL NAME: Acetic acid, 3-octyl-3-oxocyclopentyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent germination, 0
REFERENCE: Pavid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<575>
CHEMICAL NAME: Acetic acid, 4-chloro-2-oxobenzathiazolin-3-yl-
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 1.0, 2.5, and 5.0X10(-3)M (3 ml/plant)
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Death of proximal root sections at 1.0 and 5.0 X 10(-3)M moderate effects on more distal root sections
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

<576>
<576>
CHEMICAL NAME: Acetonitrile, amino-N-(2-methoxyphenyl)-
CHEMICAL COMMON NAME: Glycinonitrile, N-(o-methoxyphenyl)-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse effect on peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<577>
CHEMICAL NAME: Acetonitrile, beta-naphthoxy-
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: Charlock germination inhibited (% inhibition not given); little or no effect on oat germination and growth
COMMENTS: Activity approximately equal to alpha-naphthylacetic acid (see data sheet for comparison)
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<578>
CHEMICAL NAME: Acetonitrile, diphenyl-
CHEMICAL COMMON NAME: L-13489
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bluegrass, annual (POA ANNUA); Fescue, creeping red (FESTUCA RUBRA); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 12.0 lb/A
APPLICATION METHODS: Applied to soil surface as preemergence spray; 35 to 40 psi
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; herbicides applied and seed planted at monthly intervals to determine residual effect; time period--1958 and 1959
EFFECTS: No reduction of germination of turfgrasses in June or July application
COMMENTS: In pre-emergence crabgrass control study in turf, no significant differences found between calcium arsenate and arsenic complex + 7% nitrogen with respect to time of application; these herbicides effectively controlled crabgrass; however, arsenic complex + 7% nitrogen injured turf; fenac formulations did not satisfactorily control crabgrass and severely injured turf; chlordane most effective when applied in the spring but did not satisfactorily control crabgrass
REFERENCE: Juska, F.V., "Pre-emergence Herbicides for Crabgrass Control and Their Effects on Germination of Turfgrass Species," Weeds 9(1):137-144 (1961).

<579>
CHEMICAL NAME: Acetophenone, 2,6-dichloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Strongly toxic to clover and alfalfa at 10(-4) M, moderately toxic to pigweed, mustard, and tomatoes, minor toxicity to ryegrass; minor or no phytotoxicity to all plants at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<580>
CHEMICAL NAME: Acetyl chloride, (2,4,5-trichlorophenoxy)-
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 5 ml of oil solution
APPLICATION METHODS: Spray in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: Significant reductions in plant growth and crop yield
COMMENTS: 2,4,5 trichloro configuration appears significant for phytocidal action for potato
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<581>
CHEMICAL NAME: Acidalyne
CHEMICAL COMMON NAME: Acidalyne
PLANT: Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 2.5, 5.0, and 7.5 lb/A
APPLICATION METHODS: Postemergence; granular formulation (5%)
EXPERIMENTAL CONDITIONS: Experimental sites located on highway rights-of-way; fall treatments, spring evaluations; 100 sq ft treatment sites--1 sq ft subsample areas; number of seedheads counted; height of 3 representative plants measured and visual damage estimates made
EFFECTS: Number of seedheads and plant height reduced; 7.5 lb/A most effective rate; foliage injury at all rates, 61% live foliage compared with untreated control at 7.5 lb/A
REFERENCE: Chappell, W.E., J.S. Coartney, and M.L. Link, "Plant Growth Regulators for Highway Maintenance," Proc. South. Weed Sci. Soc. 30:300-305 (1977).

<582>
CHEMICAL NAME: ACP 646A
CHEMICAL COMMON NAME: ACP-646A
PLANT: Spinach (SPINACIA OLERACEA); Plants
EXPERIMENTAL DOSE: 1.50 and 2.25 gal/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; single and double spinach seeding rates and normal and delayed times
EFFECTS: Effective weed control (delayed seeding) but severe reduction of spinach yield
COMMENTS: No chemical increased yield of spinach; two chemicals in normal seeding plots and 5 chemicals in delayed seeding plots gave as good yield as untreated and significant increase in weed control
REFERENCE: Noll, C.J. and M.L. Odland, "Pre-Emergence Weeding of Spinach With Chemical Herbicides," Proc. N.E. Weed Cont. Conf. 5:115-117 (1951).

<583>
CHEMICAL NAME: ACP-M-406
CHEMICAL COMMON NAME: ACP-M-406
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 40 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight control with heavy regrowth (3 mo)
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<584>
CHEMICAL NAME: ACP-68-361
CHEMICAL COMMON NAME: ACP-68-361
PLANT: Plants
EXPERIMENTAL DOSE: 3 gal/24 gal/A
APPLICATION METHODS: Postemergence application; fuel oil carrier, Microfoil boom; 12-48 gal/A oil; 35 psi
EXPERIMENTAL CONDITIONS: Field study; dormant season
EFFECTS: Slight-moderate eradication of brush
COMMENTS: On basis of effectiveness, several combined mixes of herbicides appear about as effective as 2,4,5-T in brush eradication despite considerable variation in effects
REFERENCE: Chappell, W.E., "Herbicidal Mixtures for the Control of Mixed Brush in Right-of-Way," Proc. South. Weed Sci. Soc. 26:306-309 (1973).

<585>
<585>
CHEMICAL NAME: ACP-68-49
CHEMICAL COMMON NAME: ACP- 68-49
PLANT: Plants
EXPERIMENTAL DOSE: 3 gal/24 gal/A
APPLICATION METHODS: Postemergence application; fuel oil carrier, Microfoil boom; 12-48 gal/A oil; 35 psi
EXPERIMENTAL CONDITIONS: Field study; dormant season
EFFECTS: Slight-moderate control of brush
COMMENTS: On basis of effectiveness, several combined mixes of herbicides appear about as effective as 2,4,5-T in brush eradication despite considerable variation in effects
REFERENCE: Chappell, W.E., "Herbicidal Mixtures for the Control of Mixed Brush in Right-of-Way," Proc. South. Weed Sci. Soc. 26:306-309 (1973).

<586>
CHEMICAL NAME: Acrylate, sodium trichloro-
CHEMICAL COMMON NAME: Sodium trichloroacrylate
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, 10(-4)M, and 10(-5)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Nearly complete control of shoot emergence at 10(-2)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<587>
CHEMICAL NAME: Acrylic acid, alpha-cyano-beta-(2,4-dichlorophenyl)-
CHEMICAL COMMON NAME: ACRA
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect noted
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<588>
CHEMICAL NAME: Actinomycin D
CHEMICAL COMMON NAME: Actinomycin D
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 100 micro g/ml
APPLICATION METHODS: Wick application by means of doubled thread through leaf apetiole with end of string in solution of antibiotic in vial; 0.2 ml taken up in 6 hr
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--25C; light intensity--500 ft-c
EFFECTS: Severe leaf damage to treated leaf and similar damage to developing leaves
COMMENTS: Leaves at top of plants just emerging at time of antibiotic treatment, developed more dramatic symptoms as they enlarged; leaves developed mosaics which in overall appearance resembled those produced by common strain of TMV
REFERENCE: Atsushi, H. and S.G. Wildman, "Similarity in Symptoms Produced in Tobacco Plants by Actinomycin D and TMV," Virology 31:721-722 (1967).

<589>
CHEMICAL NAME: Actinomycin D
PLANT: Coast-blite (CHENOPODIUM RUBRUM)
EXPERIMENTAL DOSE: 50 ug/ml
APPLICATION METHODS: Root application for 2 days
EXPERIMENTAL CONDITIONS: Plants cultivated in water culture; length of inflorescence was measure of floral differentiation; 4 short-day induction photoperiods
EFFECTS: Flowering inhibited
COMMENTS: Inhibition greatest when application made at first and second induction cycles; application during third and fourth induction cycles not as effective because RNA synthesized in first days of photoperiodic induction ensured to a considerable extent flower development
REFERENCE: Seidlova, E., "Inhibition of Flowering of CHENOPODIUM RUBRUM L. After the Action of Actinomycin D," Biol. Plant. 10(4):318-321 (1968).

<590>
CHEMICAL NAME: Actinomycin D
CHEMICAL COMMON NAME: Actinomycin D
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 12.5 micro g
APPLICATION METHODS: Immersion of wheat coleoptiles for up to 120 hr
EXPERIMENTAL CONDITIONS: Laboratory study; coleoptiles of different ages (up to 120 hr) studied
EFFECTS: Inhibited template activity (and therefore RNA synthesis) of wheat chromatin

<590> CONT.
COMMENTS: RNA synthesis occurs on template of chromatin isolated from wheat shoots and was inhibited by actinomycin D, RNase, and rifamycin; IAA and GA appear to have different effects on changes of template activity of chromatin in cells of different ages
REFERENCE: Likholat, T.V. and V.A. Pospelov, "The Influence of B-Indoleacetic Acid and Gibberellin on the Template Activity of the Chromatin of Wheat Coleoptiles of Different Ages," FEBS Letters 40(1):77-79 (1974).

<591>
CHEMICAL NAME: Actinomycin D
CHEMICAL COMMON NAME: Actinomycin D
PLANT: Morning glory, Japanese (PHARBITIS NIL)
EXPERIMENTAL DOSE: 3.2 to 100 X 10(-10) M; 5% polyethylene glycol
APPLICATION METHODS: Applied as droplet (10 micro l.)
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Inhibited flower induction
COMMENTS: Suppressed floral bud initiation induced by dark period; highest dose caused damage to growing point of some plants
REFERENCE: Galun, E., J. Gressel, and A. Keynan, "Suppression of Floral Induction by Actinomycin D - An Inhibitor of 'Messenger' RNA Synthesis," Life Sci. 3(1-12):911-915 (1964).

<592>
CHEMICAL NAME: Actinomycin D
CHEMICAL COMMON NAME: Actinomycin D
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 10 to 100 micro g/ml
APPLICATION METHODS: Immersion in assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated bean seedling leaves; evaluation time--12 to 14 hr
EFFECTS: Inhibited protein synthesis and chloroplast formation
COMMENTS: Inhibitors affected RNA synthesis blocked 2nd stage and arrested proplastid conversion to chloroplasts; plastid division also seemed to stop; inhibition of DNA synthesis blocked 1st stage; proplastids, escaping the stage of division, directly converted to chloroplasts which were, similarly to those formed in the first case, incapable of division
REFERENCE: Beridze, T.G., M.S. Odintsova, N.A. Cherkashina, and M.M. Sissakian, "The Effect of Nucleic Acid Synthesis Inhibitors on the Chlorophyll Formation by Etiolated Bean Leaves," Biochem. Biophys. Res. Comm. 23(5):683-690 (1966).

<593>
CHEMICAL NAME: Adenine, benzyl-
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 0.1 and 1.0 mg/l
APPLICATION METHODS: Solutions in test tube, cuttings placed in solutions
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--23 to 27 C; photoperiod--16 hr; light intensity--500 to 700 ft-c; Knop's nutrient solution with minor elements
EFFECTS: Increased shoot and leaf growth
COMMENTS: Benzyl adenine addition to basic medium resulted in sizable increases in leaf production and internode extension; shoots never rooted when growing with benzyl adenine; shoot growth with benzyl adenine greater than with rooted cultures
REFERENCE: Jones, O.P., "Effect of Benzyl Adenine on Isolated Apple Shoots," Nature 215:1514-1515 (1967).

<594>
CHEMICAL NAME: Adenine, benzyl-
CHEMICAL COMMON NAME: Benzyladenine (BA)
PLANT: Bladderwort (UTRICULARIA NIPLEXA)
EXPERIMENTAL DOSE: 5 mg/l.
APPLICATION METHODS: Addition to nutrient solution
EXPERIMENTAL CONDITIONS: Laboratory study; IN VITRO culture of shoot tips of U. INFLEXA in glass tubes or flasks containing White's nutrient medium; incubation temperature--28 C; photoperiod--18 hr; evaluation time--up to 10 wk
EFFECTS: Increased growth and flowering under short-day conditions and increased growth and no flowering under long-day conditions
COMMENTS: MEPA showed strong herbicidal effect and killed plants; AMO-1618 and coumarin inhibited apical as well as lateral bud growth; These three compouds and ABA, kinetin, BA, and zeatin unable to promote flowering under non-inductive conditions; BA stimulated growth in both long and short days; even in the latter conditions AMO-1618 and coumarin totally inhibited flowering, whereas ABA, kinetin and BA permitted 80-100 per cent of the cultures to flower; zeatin lowered the percentage of flowering cultures
REFERENCE: Ram, H.Y.M., H. Harada, and J.P. Nitsch, "Studies on Growth and Flowering in Axenic Cultures of Insectivorous Plants. III. Effects of Photoperiod, Ethrel, Morphactin and a Few Other Growth Substances and Metabolic Inhibitors on UTRICULARIA INFLEXA," Z. Pflanzenphysiol. Bd. 68(5):235-253 (1972).

<595>
CHEMICAL NAME: Adenine, benzyl-
CHEMICAL COMMON NAME: Benzyladenine
PLANT: Duckweed (LEMNA PERPUSILLA)
EXPERIMENTAL DOSE: 0.1 and 1.0 ppm
APPLICATION METHODS: Addition to culture solution
EXPERIMENTAL CONDITIONS: Laboratory study; light intensity--27,500 lux/sq m; temperature--21 to 23 C
EFFECTS: Increased growth

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COMMENTS: Abscisin inhibited growth of LEMNA MINOR cultures; culture appeared nearly completely dormant but revived readily by transferring to fresh medium free of dormin; cytokinin benzyladenine, but not auxin or gibberellin, counteracted dormin effect
REFERENCE: van Overbeek, J., J.E. Loeffler and M.I.R. Mason, "Dormin (Abscisin II), Inhibitor of Plant DNA Synthesis?," Sci. 156:1497-1499 (1967).

<596>
CHEMICAL NAME: Adenine, benzyl-
CHEMICAL COMMON NAME: BA
PLANT: Sedge, salt marsh (SCIRPUS MARITIMUS)
EXPERIMENTAL DOSE: 1.0 to 50.0 kg/ha
APPLICATION METHODS: Applied to soil surface
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; pot culture (GH); tubers planted at varied depths up to 10 cm; evaluation time--12 days; in conjunction with plowing and harrowing (field)
EFFECTS: Increased sprouting of dormant buds and reduced dry weight at 1.0 kg/ha with no adverse effect on transplanted rice and slight toxicity to direct-seeded rice
COMMENTS: Benzyladenine significantly broke bud dormancy of SCIRPUS MARITIMUS tubers in greenhouse and field experiments; in field experiments, induced sprouts from dormant buds in benzyladenine treated plots effectively controlled by either bentazon or silvex applied at 20 days after direct seeding or transplanting of rice
REFERENCE: Kim, K.U. and S.K. De Datta, "An Approach to Eradicate SCIRPUS MARITIMUS in Flooded Rice," Philippine Weed Sci. Bull. 1(2):1-14 (1974).

<597>
CHEMICAL NAME: Adenine, benzyl-
CHEMICAL COMMON NAME: BA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 10-100 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Promoted tuber sprouting
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<598>
CHEMICAL NAME: Adenosine
CHEMICAL COMMON NAME: Adenine
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 4.0 mM
APPLICATION METHODS: Immersion of intact leaves
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Severe leaf drying
COMMENTS: Intact potato leaf cells degraded adenosine via inosine to hypoxanthine whereas cells ruptured by grinding converted adenosine to adenine; direct conversion of adenosine to adenine also achieved with potato leaf tissue
REFERENCE: Page, O.T., "Effect of Phytotoxins on the Permeability of Cell Membranes," In: (R.K.S. Wood, A. Ballio, and A. Graniti, Eds.) Academic Press London, New York pp. 211-225, Phytotoxins in Plant Diseases (1972).

<599>
CHEMICAL NAME: Adenosine, 2'-deoxy-
CHEMICAL COMMON NAME: AdR
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 5x10(-3) M
APPLICATION METHODS: Incubation of both excised root tips and root tips of intact seedlings in test solution--1 to 4 hr exposure; test compound dissolved in 6.67mM phosphate buffer (PH7) or in mixture of equal volumes of tap and distilled water
EXPERIMENTAL CONDITIONS: Incubation solution--0.5% glucose and about 10 uc/ml [32P]orthophosphate or about 0.6 uc/ml [14C] thymidine for excised root tips and glucose plus 1 uc/ml 32P-labelled orthophosphate for intact seedling solution; inhibition of 32P into DNA and RNA recorded
EFFECTS: Incorporation of 32P into DNA showed marked inhibition--thus marked inhibition of DNA synthesis; RNA synthesis only slightly reduced; dATP accumulated in roots
COMMENTS: Possible that inhibition of DNA synthesis may result in chromosomal aberrations, but not necessarily so; ATP--adenosine 5'-triphosate; dATP--deoxyadenosine 5'-triphosphate
REFERENCE: Odmark, G. and B.A. Kihlman, "Effects of Chromosome-Breaking Purine Derivatives on Nucleic Acid Synthesis and on the Levels of Adenosine 5'-Triphosphate and Deoxyadenosine 5'-Triphosphate in Bean Root Tips," Mutat. Res. 2:274-286 (1965).

<600>
CHEMICAL NAME: Adenosine, 3'-deoxy-
CHEMICAL COMMON NAME: Cordycepin
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 5 and 7 mM
APPLICATION METHODS: Root tips incubated in solution containing test compound
EXPERIMENTAL CONDITIONS: 5-day-old seedling root tips excised and incubated in mixture of equal volumes of tap water and distilled water containing 0.5% glucose, 32P or [3H] thymidine and test compound; observations made in inhibition of phosphorus incorporation
EFFECTS: 5 mM stimulated 32P incorporation into inorganic phosphate but inhibited 32P incorporation into acid-soluble fraction (24 and 6%), RNA (64 and 57%), and DNA(62 and 49%), 7 mM inhibited 32P incorporation into inorganic phosphate (13%), acid-soluble fraction (20%), RNA (74%), and DNA (59%)
COMMENTS: Comparisons with untreated control
REFERENCE: Odmark, G., "True or Apparent Inhibition or Nucleic Acid Synthesis by the Chromosome-Breaking Purine Derivatives Adenine and 8-Ethoxycaffeine," Mutat. Res. 14:123-126 (1972).

<601>
CHEMICAL NAME: Adenosine, 3'-deoxy-
CHEMICAL COMMON NAME: Cordycepin
PLANT: Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 5 to 200 micro g/ml
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated radish seedlings; radiotracer protein precursors
EFFECTS: Inhibited protein synthesis at higher concentrations
COMMENTS: High concentrations totally inhibited RNA synthesis; at lower concentrations rRNA and tRNA syntheses selectively severely depressed; drug appears to have no direct effect on IN VIVO protein synthesis at any of studied doses
REFERENCE: Delseny, M., M.T. Peralta, and Y. Guitton, "Effects of Cordycepin on RNA Metabolism in Germinating Seedlings," Biochem. Biophy. Res. Comm. 64(4):1278-1285 (1975).

<602>
CHEMICAL NAME: Aflatoxin
CHEMICAL COMMON NAME: Aflatoxin
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 0.1, ,0.2, and 0.5 mg/l.
APPLICATION METHODS: Seed contact with agar medium containing aflatoxin; chloroform solutions
EXPERIMENTAL CONDITIONS: Laboratory study; seed placed on sterile agar surface; temperature--25C; in dark; evaluation times--12, 48, 68, and 120 hr; 30 lettuce cultivars
EFFECTS: Reduced hypotcotyl growth but no adverse effect on percent germination; some varietal differences in response
COMMENTS: Seed germination not inhibited by concentrations as high as 1,000 ppm in cultivar Imperial 44 or by 100 ppm in remaining cultivars; hypocotyl elongation inhibited to 46 to 68% at concentration of 100 ppm; seedlings exposed to aflatoxin did not become chlorotic; similarity between morphological reaction of plants to coumarin and aflatoxin suggests common mode of action
REFERENCE: Crisan, E. V., "Effects of Aflatoxin on Germination and Growth of Lettuce," Appl. Microbiol. 25:342-345 (1973).

<603>
CHEMICAL NAME: Aflatoxin
CHEMICAL COMMON NAME: Aflatoxin B(1)
PLANT: Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 10 to 100 ppm
APPLICATION METHODS: Immersion of pregerminated seed in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; pregerminated seed (48 hr) immersed in test solution; temperature--24 to 27 C, in dark; incubated 5 days and transferred to flasks for further 10 days and evaluated
EFFECTS: Inhibited root ahd shoot growth and caused chlorosis at all concentrations
COMMENTS: Aspergillic acid had inhibitory effect on elongation and dry weight of seedlings; aflatoxin B more effective than aspergillic acid; inhibition on elongation and weight observed; kojic acid stimulated elongation and dry weight of roots and stems; aflatoxin B developed chlorotic symptoms in treated plants aspergillic and kojic acid did not
REFERENCE: El-Khadem, M., M.S. Tewfik, and Y.A. Hamdi, "Effect of Aflatoxic B(1), Aspergillic and Kojic acid on Peanut Seedlings," Zbl. Bakt. Abt. II 130(556-559) (1975).

<604>
CHEMICAL NAME: Aflatoxin
CHEMICAL COMMON NAME: Aflatoxin
PLANT: Allyssum, golden tuff (ALLYSSUM SAXATILE); Mustard, Chinese (BRASSICA JUNCEA); Rape (BRASSICA CAMPESTRIS); Rutabaga (BRASSICA NAPOBRASSICA); Collards (BRASSICA OLERACEA); Kale (BRASSICA OLERACEA); Broccoli (BRASSICA OLERACEA); Cauliflower (BRASSICA OLERACEA); Cabbage (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Kohlrabi (BRASSICA OLERACEA); Wallflower (CHEIRANTHUS CHEIRI); Cress (LEPIDIUM SATIVUM); Allysum, sweet (LOBULARIA MARITIMA); Stocks, night-scented (MATTHIOLA BICORNIS); Watercress (NASTURTIUM OFFICINALE); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 100 micro g/ml
APPLICATION METHODS: Seed contact with agar medium containing aflatoxin
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination on washed agar substrate
EFFECTS: Strong hypocotyl/root growth inhibition of cress and stocks with moderate inhibition of remaining test species; no adverse effect on germination percentage of any test species

<604>
<604> CONT.
COMMENTS: Germination not inhibited in any test organism; inhibition of elongation of hypocotyls and roots in species studied varied from 29 to 93% and from 22 to 91%; LEPIDIUM SATIVUM was most susceptible plant studied and exhibited maximal inhibitory response
REFERENCE: Crisan, E.V., "Effects of Aflatoxin on Seedling Growth and Ultrastructure in Plants," Appl. Microbiol. 12(6):991-1000 (1973).

<605>
CHEMICAL NAME: Alanine, N-benzoyl-N-(3-chloro-4-fluorophenyl)-DL-, 1-methylethyl ester
CHEMICAL COMMON NAME: Flamprop-isopropyl
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Timothy (PHLEUM PRATENSE); Speedwell, creeping (VERONICA FILIFORMIS); Fescue (FESTUCA PRATENSIS)
EXPERIMENTAL DOSE: 1.0 and 3.0 kg/ha
APPLICATION METHODS: Postemergence spray; 337 l./ha at 2.07 bars pressure with Tee jets
EXPERIMENTAL CONDITIONS: Field study; applied at 2-3 leaf stage and tillering
EFFECTS: Slight damage to perennial ryegrasses and timothy and no adverse effect on remaining grasses at both growth-stage application at normal rate (1.0 kg/ha)
COMMENTS: All varieties susceptible to isoproturon, except at tillering stage, and to difenzoquat; perennial and Italian ryegrass varieties resistant to all other herbicides; all high-rate applications, and normal rate of difenzoquat, checked timothy
REFERENCE: Oswald, A.K. and R.J. Hagger, "The Tolerance of Ten Grass Varieties to Six Herbicides With a Potential for Wild Oat Control in Herbage Seed Crops," Proc. 12th. Br. Weed Cont. Conf. 2:715-722 (1974).

<606>
CHEMICAL NAME: Alanine, N-benzoyl-N-(3-chloro-4-fluorophenyl)-DL-, 1-methylethyl ester
CHEMICAL COMMON NAME: Flamprop-methyl
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Timothy (PHLEUM PRATENSE); Cocksfoot; Fescue (FESTUCA PRATENSIS)
EXPERIMENTAL DOSE: 1.0 and 3.0 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: All grasses resistant to damage at normal (lower) rate
COMMENTS: Isoproturon caused severe damage to all grasses except when sprayed 8 weeks after cereal harvest; established cock's-foot notably resistant; difenzoquat damaged all grasses even when established, while ethofumesate checked establishing grasses sown in August; none of the other herbicides affected the perennial and Italian rye-grasses; timothy most susceptible, especially to herbicides applied at high doses
REFERENCE: Oswald, A.K., "The Effects of Six Herbicides With a Potential for Wild-Oat Control on Ten Direct and Undersown Grasses," Proc. 1976 Br. Crop Protection Conf. 3:989-999 (1976).

<607>
CHEMICAL NAME: Alanine, N-benzoyl-N-(3,4-dichlorophenyl)-DL-, ethyl ester
CHEMICAL COMMON NAME: Benzoylprop-ethyl
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Timothy (PHLEUM PRATENSE); Cocksfoot; Fescue (FESTUCA PRATENSIS)
EXPERIMENTAL DOSE: 1.12 and 3.36 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: All grasses resistant to damage at normal (lower) rate
COMMENTS: Isoproturon caused severe damage to all grasses except when sprayed 8 weeks after cereal harvest; established cock's-foot notably resistant; difenzoquat damaged all grasses even when established, while ethofumesate checked establishing grasses sown in August; none of the other herbicides affected the perennial and Italian rye-grasses; timothy most susceptible, especially to herbicides applied at high doses
REFERENCE: Oswald, A.K., "The Effects of Six Herbicides With a Potential for Wild-Oat Control on Ten Direct and Undersown Grasses," Proc. 1976 Br. Crop Protection Conf. 3:989-999 (1976).

<608>
CHEMICAL NAME: Alanine, N-benzoyl-N-(3,4-dichlorophenyl)-L-, ethyl ester
CHEMICAL COMMON NAME: WL 17731
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<609>
CHEMICAL NAME: Alanine, 2-(4-chloro-2-methylphenoxy)-N,N-dimethyl-, ethyl ester
CHEMICAL COMMON NAME: U-29449
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 0.1 to 10.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies

<609> CONT.
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<610>
CHEMICAL NAME: Alcohol, chloroallyl
CHEMICAL COMMON NAME: Chlorallyl alcohol
PLANT: Orange, sweet (CITRUS SINENSIS)
EXPERIMENTAL DOSE: 40 to 320 microg/g (soil)
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--21 to 27 C; evaluation time--80 day; sterile and non sterile soil studied
EFFECTS: At all concentrations in sterilized soil, severe damage to orange seedlings
COMMENTS: Degraded to inactive compound in non-sterilized soil except at 320 micro g/g; no damage to seedlings when degraded
REFERENCE: Baines, R.C., L.J. Klotz, and T.A. DeWolfe, "Some Biocidal Properties of 1,3-D and its Degradation Product," Phytopathology 67(7):936-940 (1977).

<611>
CHEMICAL NAME: Aliphatic polyester, sulfonated
CHEMICAL COMMON NAME: Nekal WS 25
PLANT: Lychee (LITCHI CHINENSIS)
EXPERIMENTAL DOSE: 1:1000 and 1:2000
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Local chlorosis at leaf tip
COMMENTS: Lychee leaves susceptible to ionic and nonionic surfactants; injury due to wetting agents ranged from complete necrosis of leaves to chlorosis and mottling and premature leaf fall
REFERENCE: Nakata, S. and Y. Tanada, "Phytotoxicity of Wetting Agents on Lychee," J. Econ. Ent. 54(6):1074-1076 (1961).

<612>
CHEMICAL NAME: Alkaterge C
CHEMICAL COMMON NAME: Alkaterge C
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<613>
CHEMICAL NAME: Aluminum phosphide
CHEMICAL COMMON NAME: Phostoxin
PLANT: Corn (ZEA MAYS); Wheat (TRITICUM AESTIVUM); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 2.5, 5.0, and 7.5 g/cu m
APPLICATION METHODS: Fumigation for insect control
EXPERIMENTAL CONDITIONS: Laboratory study; seed at different moisture levels
EFFECTS: Reduced germination of corn and wheat seed at higher rates and seed moisture content with no adverse effect on germination of cotton seed
COMMENTS: Methyl bromide, carbon bisulphide, and phostoxin affected germination of corn and cotton; wheat less affected when using carbon bisulphide or phostoxin, but significantly impaired when using methyl bromide
REFERENCE: Kamel, A. H., E. Z. Fam, M. T. Mahdi, and E. M. Sheltawi, "The Phytotoxic Effect of Carbon Bisulphide, Methyl Bromide and Hydrogen Phosphide on the Germination of Seeds of Certain Field Crops," Bull. Ent. Soc. Egypt. Econ. Serv. 8:75-80 (1974).

<614>
CHEMICAL NAME: AMA
CHEMICAL COMMON NAME: AMA
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 3.8 lb/A
APPLICATION METHODS: Spray application in water at 172 gpa rate; summer and spring treatments
EXPERIMENTAL CONDITIONS: Treatments to bluegrass sod and to plots of only nutsedge; 4 x 5 ft plots with 3 replications
EFFECTS: Late spring appilcation--78% nutsedge control on grass area, 41% on soil area, minor turfgrass injury; early summer application--89% nutsedge control on grass area, 74% on soil area; objectiionable turfgrass injury
COMMENTS: Nutsedge control easier as season progresses; nutsedge easier to control on turfgrass than on bare soil; 1-inch rainfall after second spring application may have reduced effectiveness
REFERENCE: Jagschitz, J.A., "Postemergence Crabgrass and Nutsedge Control in Turfgrass with Herbicides," Proc. Northeast. Weed Sci. Soc. 29:376-381 (1975).

<615>
<615>
CHEMICAL NAME: AMA
CHEMICAL COMMON NAME: AMA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 0.5 and 2.0% solutions of 16% liquid concentrate
APPLICATION METHODS: Postemergence spray to runoff
EXPERIMENTAL CONDITIONS: Greenhouse study; treatments or ground-level clipping at 3 wk intervals; tuber samples taken prior to each treatment; flat culture; soil--mixture of soil, peat, and vermiculite; also environmental chamber study and C(14) labeled CO(2) fixation and respiration studies
EFFECTS: Repeated application resulted in accelerated starch hydrolysis in tubers--correlated with arsenic content; fat and protein content unaffected; AMA-treated plants utilized photosynthesis at higher rates
COMMENTS: Carbohydrate fraction of tuber food reserves utilized in preference to fat protein
REFERENCE: Duble, R.L. and E.C. Holt, "Effect of AMA on Synthesis and Utilization of Food Reserves in Purple Nutsedge," Weed Res. 18(1):174-178 (1970)

<616>
CHEMICAL NAME: Amide, acylmono(2-hydroxyethyl)-
CHEMICAL COMMON NAME: Textamide CE
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: At 1000 ppm, reduced survival of PHALAENOPSIS and no apparent effect on EPIDENDRUM
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<617>
CHEMICAL NAME: Amide, lauroyl/myristoyl di(2-hydroxyethyl)-
CHEMICAL COMMON NAME: Witrene L-76
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: No survival of PHALAENOPSIS at 1000 ppm and reduced survival at 100 ppm; no growth of EPIDENDRUM at 1000 ppm
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<618>
CHEMICAL NAME: Amitrole-ammonium cyanide
CHEMICAL COMMON NAME: Amitrole-NH(4)CN
PLANT: Canarygrass, reed (PHALARIS ARUNDINACEA); Quackgrass (AGROPYRON REPENS); Bromegrass, smooth (BROMUS INERMIS); Bluegrass, annual (POA ANNUA); Fescue, creeping red (FESTUCA RUBRA); Redtop (AGROSTIS ALBA)
EXPERIMENTAL DOSE: 2.2 and 4.5 kg/ha
APPLICATION METHODS: Postemergence spray; 374 l./ha
EXPERIMENTAL CONDITIONS: Field study; evaluation time--3 mos; weeded manually to produce uniform stands
EFFECTS: Poor to moderate control of all weed grasses; desirable grasses more tolerant
COMMENTS: Amitrole and dalapon combinations more toxic to reed canarygrass, smooth brome, and redtop; pyrichlor toxic to all grasses
REFERENCE: Hodgson, J.M., "Differential Response of Ditchbank Grasses to Herbicides," Weed Sci. 21(5):421-423 (1973).

<619>
CHEMICAL NAME: Ammonium iodide, benzyltrimethyl-
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 25, 50 and 100 kg/ha
APPLICATION METHODS: Chemical mixed thoroughly in top 7 cm of soil
EXPERIMENTAL CONDITIONS: Greenhouse studies; soil--silt topsoil, sand peat; fertilized after seeds planted
EFFECTS: No toxicity at 25 kg/ha, 54% injury at 50 kg/ha and 83% at 100 kg/ha
COMMENTS: Specific toxic effects not reported
REFERENCE: Chen, S-C. and R.M. Blofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<620>
CHEMICAL NAME: Ammonium iodide, ferrocenylmethyltrimethyl-
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 25, 50, 100 and 150 kg/ha
APPLICATION METHODS: Chemical mixed thoroughly in top 7 cm of soil
EXPERIMENTAL CONDITIONS: Greenhouse studies; soil--silt topsoil, sand peat; fertilized after seeds planted
EFFECTS: No plant injury at 25 kg/ha, 50% injury at 50 kg/ha, 67% injury at 100 kg/ha and 85% injury at 150 kg/ha
COMMENTS: Specific toxic effects not reported
REFERENCE: Chen, S-C. and R.M. Elofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<621>
CHEMICAL NAME: Ammonium, alkyl(C9-C15) tolymethyltrimethyl-, chloride
PLANT: Pondweed, sago (POTOMOGETON PECTINATUS); Pondweed, American (POTOMOGETON NODOSUS)
EXPERIMENTAL DOSE: 50 ppm
APPLICATION METHODS: Addition to water in which plants were growing; 0.5 hr contact time
EXPERIMENTAL CONDITIONS: Environmental chamber; temperatures--60, 70, and 80 F; light intensity--25 to 400 ft c; photoperiod--14 hr; cultured in 18 l. polyethylene buckets; evaluation time--2 wk
EFFECTS: Moderate injury of both pond weeds
COMMENTS: Pondweeds cultured at higher light intensities and higher temperatures progressively more injured; injury from treatment with either herbicide increased with age and plant maturity from early vegetative to flower-bud stage; exquivalent injury produced on plants of equivalent maturity regardless of chronological age
REFERENCE: Hodgson, R.H. and N.E. Otto, "Pondweed Growth and Response to Herbicides under Controlled Light and Temperature," Weeds 11(3):232-237 (1963).

<622>
CHEMICAL NAME: Ammonium, dimethyl-beta-hydroxyethyl-4,5,5-trimethylhexyl-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 79 and 21% cucumber root growth at 10 and 100 ppm, respectively; 79 and 12% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<623>
CHEMICAL NAME: Ammonium, n-alkyl dimethyl benzyl dimethyl-, chloride
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 5.0 and 10.0 ppmw
APPLICATION METHODS: Injected under surface of water by spray nozzle at 120 psi
EXPERIMENTAL CONDITIONS: Field study; naiads growing in 2 locations in FL; time period--1960 to 1962
EFFECTS: Effective control of naiad at 10 ppmw for 4 wk
COMMENTS: Most promising of 13 herbicides for control of southern naiad were acrolein, endothall, diquat, and paraquat; acrolein and endothall gave most rapid kill of southern naiad but retreatment necessary at end of 16 weeks
REFERENCE: Blackburn, R.D. and L.W. Weldon, "Control of Southern Naiad in Florida Drainage and Irrigation Channels," Weeds 12(4):295-298 (1964).

<624>
CHEMICAL NAME: Ammonium, phenyldimethyl-p-sec-amylbenzyl-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 37 and 7% cucumber root growth at 10 and 100 ppm, respectively; 46 and 10% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<625>
CHEMICAL NAME: Ammonium, tri-(n-amyl)-3,5,5-trimethylhexyl-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 22 and 2% cucumber root growth at 10 and 100 ppm, respectively; 47 and 4% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<626>
<626>
CHEMICAL NAME: Ammonium, tri-(n-butyl)-3,5,5-trimethylhexyl-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 30 and 4% cucumber root growth at 10 and 100 ppm, respectively; 61 and 10% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<627>
CHEMICAL NAME: Ammonium, triethyl-(3,5,5-trimethylhexyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 52 and 15% cucumber root growth at 10 and 100 ppm, respectively; 81 and 23% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<628>
CHEMICAL NAME: Ammonium, trimethyl-p-isopropylbenzyl-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 84 and 50% cucumber root growth at 10 and 100 ppm, respectively; 58 and 32% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<629>
CHEMICAL NAME: Ammonium, trimethyl-p-sec-amylbenzyl-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 40 and 14% cucumber root growth at 10 and 100 ppm, respectively; 23 and 5% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<630>
CHEMICAL NAME: Ammonium, trimethyl-p-sec-butylbenzyl-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 84 and 36% cucumber root growth at 10 and 100 ppm, respectively; 103 and 34% wheat root growth at 10 and 100 ppm, respectively
COMMENTS: Slight wheat root stimulation at 10 ppm
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<631>
CHEMICAL NAME: Ammonium, tris-(beta-hydroxyethyl)-p-sec-amylbenzyl-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 78 and 27% cucumber root growth at 10 and 100 ppm, respectively; 77 and 41% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<632>
CHEMICAL NAME: Ammonium, tris-(beta-hydroxypropyl)-p-sec-amylbenzyl-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 100 and 54% cucumber root growth at 10 and 100 ppm, respectively; 92 and 71% wheat root growth at 10 and 100 pm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<633>
CHEMICAL NAME: Ammonium, 3,5,5-trimethylhexyldimethylphenyl-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 46 and 10 % cucumber root growth at 10 and 100 ppm, respectively; 63 and 15% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<634>
CHEMICAL NAME: AMO-1618
CHEMICAL COMMON NAME: AMO-1618
PLANT: Bladderwort (UTRICULARIA NIFLEXA)
EXPERIMENTAL DOSE: 10 mg/l.
APPLICATION METHODS: Addition to nutrient solution
EXPERIMENTAL CONDITIONS: Laboratory study; IN VITRO culture of shoot tips of U. INFLEXA in glass tubes or flasks containing White's nutrient medium; incubation temperature--28 C; photoperiod--18 hr; evaluation time--up to 10 wk
EFFECTS: Reduced growth and no flowering under short- and long-day conditions
COMMENTS: MEFA showed strong herbicidal effect and killed plants; AMO-1618 and coumarin inhibited apical as well as lateral bud growth; These three compouds and ABA, kinetin, BA, and zeatin unable to promote flowering under non-inductive conditions; BA stimulated growth in both long and short days; even in the latter conditions AMO-1618 and coumarin totally inhibited flowering, whereas ABA, kinetin and BA permitted 80-100 per cent of the cultures to flower; zeatin lowered the percentage of flowering cultures
REFERENCE: Ram, H.Y.M., H. Harada, and J.P. Nitsch, "Studies on Growth and Flowering in Axenic Cultures of Insectivorous Plants. III. Effects of Photoperiod, Ethrel, Morphactin and a Few Other Growth Substances and Metabolic Inhibitors on UTRICULARIA INFLEXA," Z. Pflanzenphysiol. Bd. 68(5):235-253 (1972).

<635>
CHEMICAL NAME: Amylase
CHEMICAL COMMON NAME: Diastase
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<636>
CHEMICAL NAME: Amylovorin
CHEMICAL COMMON NAME: Amylovorin
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 10, 50, and 100 microgram/ml
APPLICATION METHODS: Excised shoot exposure in solutions
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Shoots of Jonathan apple wilted in one to four hours
COMMENTS: Toxin host specific
REFERENCE: Goodman, R.N., J.S. Huang, and P.Y. Huang, "Host-Specific Phytotoxic Polysaccharide from Apple Tissue Infected by ERWINIA AMYLOVORA, Science 183(4120):1081-1082 (1974).

<637>
<637>
CHEMICAL NAME: Androst-4-en-3-one, 17-hydroxy-, (17 beta)-
CHEMICAL COMMON NAME: Testosterone
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 to 10 micro g/plant; 0.05% Tween 20 and ethanol
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: No adverse or stimulatory effect
COMMENTS: Estrone, 17-beta-estradiol, and beta-sitosterol increased growth of pea; treatment with cholesterol and testosterone resulted in no observable stimulation of growth
REFERENCE: Kopcewicz, J., "Influence of Steroids on the Growth of the Dwarf Pea," Kurze Originalmitteilungen 56(5):287 (1969).

<638>
CHEMICAL NAME: Anhydride, tetrabromophthalic
CHEMICAL COMMON NAME: Tetrabromophthalic anhydride
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<639>
CHEMICAL NAME: Anhydride, 1,8-naphtholic-
CHEMICAL COMMON NAME: NA
PLANT: Oat (AVENA SATIVA); Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.5 and 1.0% of seed weight
APPLICATION METHODS: Seed coating
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture, 11 klux light intensity; 22 C for 16 hr photoperiod; 18 C for dark, soil-sandy loam; field study, soil-silt loam, handweeding; NA (1,8-naphthalic anhydride) used at 0.5 and 1.0% of seed weight as antidote by means of seed coating
EFFECTS: Barban significantly reduced growth of oats and wild oats at both application rates; effect was reversed by NA (1%) for oats but not for wild oats; results in greenhouse were corroborated in field study; similar results for diallate and triallate
COMMENTS: Coating seeds of oats with NA significantly reduced phytotoxicity of barban applied to foliage; protection obtained when barban applied at 0.4 kg/ha, highest rate recommended for control of wild oats
REFERENCE: Chang, F.Y., G.R. Stevenson, G.W. Anderson, and J.D. Bandeen, "Control of Wild Oats in Oats with Barban Plus Antidote," Weed Sci. 22(6):546-548 (1974).

<640>
CHEMICAL NAME: Aniline, N-sec-butyl-4-tert-butyl-2,6-dinitro-
CHEMICAL COMMON NAME: ACP-70-25
PLANT: Broadleaf weeds; Grasses; Bean, pinto (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preplant spray (incorporated, 3.5 in. depth) and preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--Tripp sandy loam and Bridgeport loam; two locations in Nebraska
EFFECTS: Moderate control of weeds with no adverse effect on field beans
COMMENTS: Weed control and field bean yields higher when EPTC, trifluralin, and alachlor incorporated than when applied 4 days after planting and rotary hoed; best results with alachlor resulted when applied preemergence; best control of black nightshade was with EPTC and alachlor or these herbicides in combinations with other herbicides
REFERENCE: Fenster, C.R. and G.A. Wicks, "Weed Control in Field Beans in Nebraska," Proc. N. Centr. Weed Contr. Conf. 26:50-52 (1971).

<641>
CHEMICAL NAME: Aniline, N-sec-butyl-4-tert-butyl-2,6-dinitro-
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 10(-5) M
APPLICATION METHODS: Drench treatments as emulsifiable concentrate
EXPERIMENTAL CONDITIONS: Seedlings germinated in dark in vermiculite and in 20 mg/l. solution of streptomycin sulfate at 30 C; seedlings harvested after 4 days for chromatin-extraction; excess herbicide removed 5 min. after drenching
EFFECTS: Chromatin supported RNA synthesis reduced 33%
COMMENTS: Chromatin extraction method described
REFERENCE: Penner, D. and R.W. Early, "Action of Trifluralin on Chromatin Activity in Corn and Soybean," Weed Sci. 10(4):364-366 (1972).

<642>
CHEMICAL NAME: Arochlor 1242
CHEMICAL COMMON NAME: PCB
PLANT: (SPIRODELA sp.)
EXPERIMENTAL DOSE: 5 to 100 ppm
APPLICATION METHODS: Addition to liquid culture medium
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--20 C; photoperiod--18 hr
EFFECTS: Reduced growth at lowest concentration (5 ppm); lethality occurred at 100 ppm
COMMENTS: Colonies in treated medium had smaller fronds indicating retarded growth; each colony had large number of small fronds, sometimes up to 10 in colony indicating failure of maturing frond to separate; more prominent in lower concentrations of PCB
REFERENCE: Mahanty, H. K., "A Study on the Effects of Polychlorinated Biphenyl (Arochlor 1242) on an Aquatic Plant - SPIRODELA OLIGORHIZA (Kurtz) Helm," Bull. Envir. Contam. Toxicol. 14(1):558-561 (1975).

<643>
CHEMICAL NAME: Arsenic
CHEMICAL COMMON NAME: Arsenic
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0-2,553 ppm (soil residue); 165 ppm average
APPLICATION METHODS: Soil contaminated over period of years by varied agricultural applications
EXPERIMENTAL CONDITIONS: Field and greenhouse studies; 58 soils taken in field and bioassayed in greenhouse
EFFECTS: Growth reduction of corn in bioassay
COMMENTS: More important than effect of total As content of soil on phytotoxicity is problem of different toxicities of water-soluble Ca-, Al-, Fe-As, and other soil fractions; when sum of As contained in Ca, Fe, Al, and water-soluble fractions correlated with plant growth, a highly significant correlation coefficient of 0.82 obtained
REFERENCE: Woolson, E.A., J.H. Axley, and P.C. Kearney, "The Chemistry and Phytotoxicity of Arsenic in Soils: I. Contaminated Field Soils," Soil Sci. Soc. Am. Proc. 35(6):938-943 (1971).

<644>
CHEMICAL NAME: Arsenic acid, calcium salt
CHEMICAL COMMON NAME: Calcium arsenate
PLANT: Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 88.0 and 176.0 kg/ha; G and WP
APPLICATION METHODS: Preemergence soil application; postemergence on mature turf
EXPERIMENTAL CONDITIONS: Greenhouse study; 14-hr photoperiod; temperature--24-30 C(day) and 18-22 C (night); pH (soil)--7.6-8.1; 40-83 ppmw (P); 78-104 ppmw (K); 2922-2917 (CA); 219-327 ppmw (Mg); evaluation time--up to 15 day
EFFECTS: Granular and powder formulations reduced clipping yield and increased extractable arsenic yields; phosphorus soil levels did not influence effectiveness of either arsenic formulation; effects essentially same for preemergence and postemergence applications
COMMENTS: Powdered formulation initially more active than granular formation
REFERENCE: Carrow, R.N. and P.E. Pieke, "Effect of Tricalcium Arsenate Formulations on Control of Annual Bluegrass (POA ANNUA)," Weed Sci. 25(4):364-367 (1977).

<645>
CHEMICAL NAME: Arsenic acid, calcium salt
CHEMICAL COMMON NAME: Tri-calcium arsenate
PLANT: Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 56, 112, 224 and 448 kg/ha
APPLICATION METHODS: WP formulation applications with a gauged hand pump compression sprayer; preemergence application in July; first year applications of 224 and 448 kg/ha, second and third year applications of 56 and 112 kg/ha
EXPERIMENTAL CONDITIONS: Emory clay loam soil; 4 year experiment with fourth year used to determine recovery -- no herbicide application; randomized complete block design with 3 replications and a check; plots measured 0.9 by 4.8 m with 0.3-m border between plots; no border between replications; injury determined by sod loss and foliar damage; lowest rates of application halved, plots treated with high rates applied four times
EFFECTS: First year -- no foliage burn or sod loss; second year -- slight browning of foliage; third year -- slight foliage browning, minor sod loss; fourth year -- no persisting foliage injury or sod loss
COMMENTS: Least injury caused by tri-calcium arsenate as compared to other herbicides tested; high degree of residue persistence
REFERENCE: Callahan, L.M., "Phytotoxicity of Herbicides to a Tifgreen Bermudagrass Green," Weed Sci. 24(1):92-98(1976).

<646>
CHEMICAL NAME: Arsenic acid, calcium salt
CHEMICAL COMMON NAME: Calcium arsenate
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1:10 (tale dust)
APPLICATION METHODS: Dust; 30 lb/A
EXPERIMENTAL CONDITIONS: Field study; 4 or 8 applications beginning with plant emergence
EFFECTS: No adverse effect
COMMENTS: Four applications of dusts of lindane, rotenone, methoxychlor, nicotine, calcium arsenate-tale, calcium arsenate-COCS, or COCS-talc neutral in effect on cucumber; four applications of dusts of DDT caused severe stunting of vines and markedly reduced yields
REFERENCE: Harcourt, D.G. and L.M. Cass, "Toxicities of Various Insecticides to Cucumber," Cand. J. Agr. Sci. 35:19-26 (1955).

<647>
<647>
CHEMICAL NAME: Arsenic acid, calcium salt
CHEMICAL COMMON NAME: Calcium arsenate
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bluegrass, annual (POA ANNUA); Fescue, creeping red (FESTUCA RUBRA); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, tall (FESTUCA ARUNDINACEA); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 350 and 520 lb/A; WS
APPLICATION METHODS: Applied to soil surface as preemergence spray; 35 to 40 psi
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; herbicides applied and seed planted at monthly intervals to determine residual effect; time period--1958 and 1959
EFFECTS: Reduced germination or subsequent seedling kill of all turf varieties and effective control of crabgrass at 520 lb/A for up to 5 months
COMMENTS: In pre-emergence crabgrass control study in turf, no significant differences found between calcium arsenate and arsenic complex + 7% nitrogen with respect to time of application; these herbicides effectively controlled crabgrass; however, arsenic complex + 7% nitrogen injured turf; fenac formulations did not satisfactorily control crabgrass and severely injured turf; chlordane most effective when applied in the spring but did not satisfactorily control crabgrass
REFERENCE: Juska, F.V., "Pre-emergence Herbicides for Crabgrass Control and Their Effects on Germination of Turfgrass Species," Weeds 9(1):137-144 (1961).

<648>
CHEMICAL NAME: Arsenic acid, calcium salt
CHEMICAL COMMON NAME: Calcium arsenate
PLANT: Bluegrass, annual (POA ANNUA); Bluegrass, Kentucky (POA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Fescue, creeping red (FESTUCA RUBRA); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 261 to 1044 lb/A
APPLICATION METHODS: Preemergence spray (field); 35 psi; for soluble or wettable materials; sand carrier for remaining materials; applied annually for 3 years; addition to soil (greenhouse)
EXPERIMENTAL CONDITIONS: Field study; bluegrass turf killed with methyl bromide and plots seeded 3 days afterwards with various turf grasses; time period--1960 to 1962; greenhouse study--studied seedling emergence (germination) up to 93 days in flat culture
EFFECTS: At 522 lb/A, reduced stand of common bluegrass, ryegrass, and tall fescue with no adverse effect on other grasses after 3 applications; reduced germination of red fescue and ryegrass but no adverse effect on germination of other grasses for up to 93 days after herbicide application (greenhouse)
COMMENTS: With few exceptions, herbicides retarded stand and vigor of turfgrasses seeded in turf killed with methyl bromide; chlordane was least and commercial arsenic complex plus 7% N most toxic to young seedlings; seedlings of Merion Kentucky bluegrass most resistent to herbicide injury; no appreciable decrease in original turf density noted except for arsenic complex material which severely injured bluegrass turf
REFERENCE: Juska, F.V. and A.A. Hanson, "Effect of Preemergence Crabgrass Herbicides on Seedling Emergence of Turfgrass Species," Weeds 12(2):97-101 (1964).

<649>
CHEMICAL NAME: Arsenic acid, calcium salt (2:3)
CHEMICAL COMMON NAME: COCS
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10:1 (tale dust)
APPLICATION METHODS: Dust; 30 lb/A
EXPERIMENTAL CONDITIONS: Field study; 4 or 8 applications beginning with plant emergence
EFFECTS: No adverse effect on growth but slight chlorosis
COMMENTS: Four applications of dusts of lindane, rotenone, methoxychlor, nicotine, calcium arsenate-tale, calcium arsenate-COCS, or COCS-talc neutral in effect on cucumber; four applications of dusts of DDT caused severe stunting of vines and markedly reduced yields
REFERENCE: Harcourt, D.G. and L.M. Cass, "Toxicities of Various Insecticides to Cucumber," Cand. J. Agr. Sci. 35:19-26 (1955).

<650>
CHEMICAL NAME: Arsenic acid, dilithium
CHEMICAL COMMON NAME: Dilithium arsenate
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<651>
CHEMICAL NAME: Arsenic acid, lead salt
CHEMICAL COMMON NAME: Lead arsenate
PLANT: Bluegrass, annual (POA ANNUA); Bluegrass, Kentucky (POA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Fescue, creeping red (FESTUCA RUBRA); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 435 to 1740 lb/A
APPLICATION METHODS: Preemergence spray (field); 35 psi; for soluble or wettable materials; sand carrier for remaining materials; applied annually for 3 years; addition to soil (greenhouse)
EXPERIMENTAL CONDITIONS: Field study; bluegrass turf killed with methyl bromide and plots seeded 3 days afterwards with various turf grasses; time period--1960 to 1962; greenhouse study--studied seedling emergence (germination) up to 93 days in flat culture

<651> CONT.
EFFECTS: At 870 lb/A, reduced stand of ryegrass with no adverse effect on other turfgrasses after 3 applications; little adverse effect on seed germination (greenhouse)
COMMENTS: With few exceptions, herbicides retarded stand and vigor of turfgrasses seeded in turf killed with methyl bromide; chlordane was least and commercial arsenic complex plus 7% N most toxic to young seedlings; seedlings of Merion Kentucky bluegrass most resistent to herbicide injury; no appreciable decrease in original turf density noted except for arsenic complex material which severely injured bluegrass turf
REFERENCE: Juska, F.V. and A.A. Hanson, "Effect of Preemergence Crabgrass Herbicides on Seedling Emergence of Turfgrass Species," Weeds 12(2):97-101 (1964).

<652>
CHEMICAL NAME: Arsenic acid, sodium
CHEMICAL COMMON NAME: Sodium arsenate
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS); Soybean (GLYCINE MAX); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Radish (RAPHANUS SATIVUS); Oat (AVENA SATIVA); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 5X10(-3) and 1X10(-2) M; 0.5% surfactant (Atplus 401)
APPLICATION METHODS: Postemergence spray; glass atomizer at 140 to 350 g/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature - approx 20 C; evaluation times-- 1,2,4 and 7 da
EFFECTS: Significant growth reduction of black valentine beans with less reduction for remaining test species
COMMENTS: Cacodylic acid more phytotoxic than MSMA, sodium arsenate, or sodium arsenite; MSMA much more effective on dicotyledonous than on monocotyledonous species; sodium arsenite and arsenate had little effect on grasses
REFERENCE: Sachs, R.M. and J.L. Michael, "Comparative Phytotoxicity Among Four Arsenical Herbicides," Weed Sci. 19(5):558-564 (1971).

<653>
CHEMICAL NAME: Arsenic acid, sodium
CHEMICAL COMMON NAME: Sodium arsenite
PLANT: Plants
EXPERIMENTAL DOSE: 900 lb/A
APPLICATION METHODS: Postemergence spray; two applications
EXPERIMENTAL CONDITIONS: Field study, road cracks and road right-of-way
EFFECTS: Effective weed control for 12 mos
COMMENTS: Initial postpaving treatment made with beginning of growth in spring; TCA applied at rate of 24 lb/ft-mile, and subsequent applications made as needed; treatment interval about 30 days
REFERENCE: McCully, W. G., W. J. Bowmer, and A. F. Wiese, "Control of Grasses and Weeds Growing in Asphalt Pavements," PANS 16(3):497-504 (1970).

<654>
CHEMICAL NAME: Arsenic acid, trilithium
CHEMICAL COMMON NAME: Trilithium arsenate
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: Effective initial control of sago pondweed at 20.0 lb/A with no control of American pondweed
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<655>
CHEMICAL NAME: Arsenic complex
CHEMICAL COMMON NAME: Arsenic complex
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bluegrass, annual (POA ANNUA); Fescue, creeping red (FESTUCA RUBRA); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, tall (FESTUCA ARUNDINACEA); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 1090 lb/A; WS
APPLICATION METHODS: Applied to soil surface as preemergence spray; 35 to 40 psi
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; herbicides applied and seed planted at monthly intervals to determine residual effect; time period--1958 and 1959
EFFECTS: Reduced germination of all turfgrasses for up to 5 months and effective crabgrass control
COMMENTS: In pre-emergence crabgrass control study in turf, no significant differences found between calcium arsenate and arsenic complex + 7% nitrogen with respect to time of application; these herbicides effectively controlled crabgrass; however, arsenic complex + 7% nitrogen injured turf; fenac formulations did not satisfactorily control crabgrass and severely injured turf; chlordane most effective when applied in the spring but did not satisfactorily control crabgrass
REFERENCE: Juska, F.V., "Pre-emergence Herbicides for Crabgrass Control and Their Effects on Germination of Turfgrass Species," Weeds 9(1):137-144 (1961).

<656>
<656>
CHEMICAL NAME: Arsenic complex
CHEMICAL COMMON NAME: Arsenic complex
PLANT: Bluegrass, annual (POA ANNUA); Bluegrass, Kentucky (POA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Fescue, creeping red (FESTUCA RUBRA); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 435 to 1740 lb/A
APPLICATION METHODS: Preemergence spray (field); 35 psi; for soluble or wettable materials; sand carrier for remaining materials; applied annually for 3 years; addition to soil (greenhouse)
EXPERIMENTAL CONDITIONS: Field study; bluegrass turf killed with methyl bromide and plots seeded 3 days afterwards with various turf grasses; time period--1960 to 1962; greenhouse study--studied seedling emergence (germination) up to 93 days in flat culture
EFFECTS: At 870 lb/A, reduced stand of all grasses except Merion bluegrass after 3 applications; reduced germination of all grasses (greenhouse)
COMMENTS: With few exceptions, herbicides retarded stand and vigor of turfgrasses seeded in turf killed with methyl bromide; chlordane was least and commercial arsenic complex plus 7% N most toxic to young seedlings; seedlings of Merion Kentucky bluegrass most resistent to herbicide injury; no appreciable decrease in original turf density noted except for arsenic complex material which severely injured bluegrass turf
REFERENCE: Juska, F.V. and A.A. Hanson, "Effect of Preemergence Crabgrass Herbicides on Seedling Emergence of Turfgrass Species," Weeds 12(2):97-101 (1964).

<657>
CHEMICAL NAME: Arsenite, potassium salt
CHEMICAL COMMON NAME: Potassium arsenite
PLANT: Oat, wild (AVENA FATUA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-6) to 2 X 10(-5) M
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; oat and pea coleoptile assays
EFFECTS: Inhibited growth
COMMENTS: Arsenite, parachloromercuribenzoate, and phenylmercuric salts inhibited growth; inhibitions differed from those caused by iodoacetate in that they were not prevented or reversed by malate or other organic acids; difference ascribed to greater affinity of enzyme for these substances than for iodoacetate
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. II. The Action of Several Enzyme Inhibitors on the Growth of the AVENA Coleoptile and on PISUM Internodes," Am. J. Bot. 36:214-221 (1949).

<658>
CHEMICAL NAME: Arsenite, sodium
CHEMICAL COMMON NAME: Sodium arsenite
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS); Soybean (GLYCINE MAX); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Radish (RAPHANUS SATIVUS); Oat (AVENA SATIVA); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 5X10(-3) and 1X10(-2) M; 0.5% surfactant (Atplus 401)
APPLICATION METHODS: Postemergence spray; glass atomizer at 140 to 350 g/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature - approx 20 C; evaluation times-- 1,2,4 and 7 da
EFFECTS: Significant growth reduction of black valentine bean and soybean with less reduction for remaining species
COMMENTS: Cacodylic acid more phytotoxic than MSMA, sodium arsenate, or sodium arsenite; MSMA much more effective on dicotyledonous than on monocotyledonous species; sodium arsenite and arsenate had little effect on grasses
REFERENCE: Sachs, R.M. and J.L. Michael, "Comparative Phytotoxicity Among Four Arsenical Herbicides," Weed Sci. 19(5):558-564 (1971).

<659>
CHEMICAL NAME: Arsenite, sodium
CHEMICAL COMMON NAME: Sodium arsenite
PLANT: Corn (ZEA MAYS); Bean, snap (PHASEOLUS VULGARIS); Potato (SOLANUM TUBEROSUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 45, 90, 180, and 720 kg/ha
APPLICATION METHODS: Preplant spray; soil incorporation by disking (10 to 15 cm)
EXPERIMENTAL CONDITIONS: Field study; soil--Plainfield sand; pH-5.5; application rates of As represent 5-85 years of consecutive application as potato defoliant; normal cultivation practices followed; potatoes planted in 1967, peas-beans-corn in 1968, and peas in 1969
EFFECTS: Vegetable yield decreased at two high rates or were killed (beans and corn) at highest rate
COMMENTS: Yields of potatoes greater than check at low rates, but decreased to 79 and 24% of check yield at high As rates; snap bean and sweet corn yields also decreased with increasing As, and no growth obtained on high As plots; As content of above-ground portions of potatoes varied widely, and bore no relationship to As treatment; evidence of As contamination by windblown As-treated soil obtained; arsenic was below detectable limits in edible portions of peas and sweet corn
REFERENCE: Jacobs, L.W., D.R. Keeney, and L.M. Walsh, "Arsenic Residue Toxicity to Vegetable Crops Grown on Plainfield Sand," Agron. J. 62(4):588-591 (1970).

<660>
CHEMICAL NAME: Arsenous acid, sodium salt
CHEMICAL COMMON NAME: Sodium arsenite
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 2.5 lb/A
APPLICATION METHODS: Foliar spray, 360 gal/A; 3 weekly applications
EXPERIMENTAL CONDITIONS: Field study; time period--1948 to 1950
EFFECTS: Moderate to effective crabgrass control with slight to moderate damage of turfgrass
COMMENTS: S-1840, S-1980, and S-1998 gave crabgrass control equivalent to several phenyl mercury compounds and potassium cyanate; essentially no injury evident 36 days after treatment
REFERENCE: Engel, R.E. and R.J. Aldrich, "Three New Compounds for controlling Crabgrass in Turf," Proc. N.E. Weed cont. Conf. 5:151-160 (1951).

<661>
CHEMICAL NAME: Arsinic acid, dimethyl-
CHEMICAL COMMON NAME: Cacodylic acid
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS); Soybean (GLYCINE MAX); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Radish (RAPHANUS SATIVUS); Oat (AVENA SATIVA); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 5X10(-3) and 1X10(-2) M; 0.5% surfactant (Atplus 401)
APPLICATION METHODS: Postemergence spray; glass atomizer at 140 to 350 g/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature - approx 20 C; evaluation times-- 1,2,4 and 7 da
EFFECTS: Significant growth reduction for all test plants at both concentrations with slightly less inhibition for monocots
COMMENTS: Cacodylic acid more phytotoxic than MSMA, sodium arsenate, or sodium arsenite; MSMA much more effective on dicotyledonous than on monocotyledonous species; sodium arsenite and arsenate had little effect on grasses
REFERENCE: Sachs, R.M. and J.L. Michael, "Comparative Phytotoxicity Among Four Arsenical Herbicides," Weed Sci. 19(5):558-564 (1971).

<662>
CHEMICAL NAME: Arsinic acid, dimethyl-
CHEMICAL COMMON NAME: Cacodylic acid
PLANT: Hibiscus (HIBISCUS ROSA); Guava (PSIDIUM GUAJAVA); Sorghum (SORGHUM BICOLOR); Cotton (GOSSIPIUM ARBOREUM)
EXPERIMENTAL DOSE: 0.3 to 7,560 micro g/leaf
APPLICATION METHODS: Applied as droplets to leaves with micropipette
EXPERIMENTAL CONDITIONS: Field study (hibiscus and guava); greenhouse study (sorghum and cotton)
EFFECTS: Leaf kill at 79 to 315 micro g/leaf within 7 days
COMMENTS: Pentachlorophenol and AP-20 produced most rapid desiccation at high dosages; usually as effective as PCP and AP-20 within 1 to 2 days after treatment, and produced more extensive desiccation at lower dosages, especially on hibiscus, sorghum, and cotton; diquat, paraquat, cacodylic acid, and AP-20 produced complete defloiation of hibiscus within 5 days after treatment but diquat and paraquat were more effective at lower dosages than other defoliants; diquat completely defoliated hibiscus regardless of placement on leaf, but higher dosages required for effective desiccation when applied non-uniformly over leaf
REFERENCE: Bovey, R.W. and F.R. Miller, "Desiccation and Defoliation of Plants by Different Herbicides and Mixtures," Agron. J. 60(1):700-702 (1968).

<663>
CHEMICAL NAME: Arsinic acid, dimethyl-
CHEMICAL COMMON NAME: Cacodylic acid
PLANT: Bahiagrass (PASPALUM NOTATUM)
EXPERIMENTAL DOSE: 8.0 lb/A
APPLICATION METHODS: Postemergence spray; 37-50 gal/A
EXPERIMENTAL CONDITIONS: Field study; 3 locations (FL); time period--1971 and 1972; evaluation time--8 to 26 wks
EFFECTS: Slight control of bahiagrass
COMMENTS: Combinations of diuron or simazine plus 2 applications of dalapon, 2 applications of dalapon alone or single applications of glyphosate provided best grass control; in addition bahiagrass controlled with oxadiazon and asulam
REFERENCE: Arnold, C.E. and J.B. Aitken, "Perennial Grass Control in Pecan Orchards," Proc. South. Weed Sci. Soc. 26:231-235 (1973).

<664>
CHEMICAL NAME: Arsinic acid, dimethyl-
CHEMICAL COMMON NAME: Cacodylic acid
PLANT: Cogongrass (IMPERATA CYLINDRICA)
EXPERIMENTAL DOSE: 4.48 kg/ha
APPLICATION METHODS: Postemergence spray; 300 l./ha; 0.5% surfactant; application repeated 2x or 5x
EXPERIMENTAL CONDITIONS: Field study; pure cogongrass stands in near-dormant state; time period--1971 and 1972
EFFECTS: Moderate control (5X only) with regrowth after one year
COMMENTS: All soil sterilants provided acceptable control; single applications of TCA and dalapon controlled cogongrass without prolonged soil sterility
REFERENCE: Dickens, R. and G.A. Buchanan, "Control of Cogongrass with Herbicides," Weed Sci. 23(3):194-197 (1975).

<665>
<665>
CHEMICAL NAME: Arsinic acid, dimethyl-
CHEMICAL COMMON NAME: Cacodylic acid
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Nimblewill (MUHLENBERGIA SCHREBERI)
EXPERIMENTAL DOSE: 1, 2, and 3 lb/A
APPLICATION METHODS: Postemergence spray in 30 gpa solution
EXPERIMENTAL CONDITIONS: Nimblewill and bluegrass 3 to 5 in. high when treated; 6 X 17 ft plots; randomized block design with 3 replications; bluegrass injury rating 4 weeks after treatment; percent nimblewill reduction determined at 7 and 52 weeks after treatment
EFFECTS: Bluegrass--80.0, 83.2, and 86.5% injury at 1, 2, and 3 lb/A; nimblewill--50.0, 75.9, and 81.5% reduction at 7 weeks at 1, 2, and 3 lb/A and 0, 0, and 1.9% reduction at 52 weeks at respective rates
REFERENCE: Waldrep, T.W. and J.F. Freeman, "Herbicides for Nimblewill in Kentucky Bluegrass Pasture," Weeds 12(4):317-318 (1964).

<666>
CHEMICAL NAME: Arsinic acid, dimethyl-
CHEMICAL COMMON NAME: Dimethylarsinic acid
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<667>
CHEMICAL NAME: Arsinic acid, dimethyl-, sodium salt
CHEMICAL COMMON NAME: Sodium cacodylate
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 10.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Spray resulted in reduced sprouting
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<668>
CHEMICAL NAME: Arsonate, dodecylammoniummethane-
CHEMICAL COMMON NAME: Dodecyl ammonium methylarsonate
PLANT: Dallisgrass (PASPALUM DILATATUM); Crabgrass, large (DIGITARIA SANGUINALIS); Bermudagrass, common (CYNODON DACTYLON); Smutgrass (SPOROBOLUS POIRETII)
EXPERIMENTAL DOSE: 33.0 and 66.0 g/1000 sq ft
APPLICATION METHODS: Foliar spray; 5 gal/1000 sq ft; 3 sprays at weekly intervals
EXPERIMENTAL CONDITIONS: Field study; bermudagrass lawn
EFFECTS: Effective control of dallisgrass and crabgrass at highest rate with no adverse effect on lawn or smutgrass
COMMENTS: AMA and DMA equally effective in controlling dallis grass when sprayed 3 times; bahia grass also controlled by these herbicides, but Bermuda grass and smut grass resistant
REFERENCE: Hearn, C.J. and G.W. Burton, "Effects of Two Arsenical Herbicides on Several Southern Grasses," Proc. Southern Weed Conf. 13:224-227 (1960).

<669>
CHEMICAL NAME: Arsonate, octylammoniummethane-
CHEMICAL COMMON NAME: Octylammonium methylarsonate
PLANT: Dallisgrass (PASPALUM DILATATUM); Crabgrass, large (DIGITARIA SANGUINALIS); Bermudagrass, common (CYNODON DACTYLON); Smutgrass (SPOROBOLUS POIRETII)
EXPERIMENTAL DOSE: 37.6 and 75.2 g/100 sq ft
APPLICATION METHODS: Foliar spray; 5 gal/1000 sq ft; 3 sprays at weekly intervals
EXPERIMENTAL CONDITIONS: Field study; bermudagrass lawn
EFFECTS: Effective control of dallisgrass and crabgrass at highest rate with no adverse effect on lawn or smutgrass
COMMENTS: AMA and DMA equally effective in controlling dallis grass when sprayed 3 times; bahia grass also controlled by these herbicides, but Bermuda grass and smut grass resistant
REFERENCE: Hearn, C.J. and G.W. Burton, "Effects of Two Arsenical Herbicides on Several Southern Grasses," Proc. Southern Weed Conf. 13:224-227 (1960).

<670>
CHEMICAL NAME: Arsonic acid, methyl-, ammonium salt
CHEMICAL COMMON NAME: Ammonium methane arsonate
PLANT: Plaintain, black-seeded (PLANTAGO RUGELII); Clover, white (TRIFOLIUM REPENS)
EXPERIMENTAL DOSE: 3.5 lb/A; WS
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; time period--1974 and 1975
EFFECTS: Moderate control of plantain and effective control of clover
COMMENTS: Combination treatments were more effective than single herbicides alone; Vel 4207 showed considerable activity at low rates on white clover with limited effectiveness on plantain; methazole injurious to turf
REFERENCE: Hall, J.R., "Control of Broadleaf Weeds in Cool-Season Turf," Proc. N.E. Weed Sci. Soc. 30:377-384 (1976).

<671>
CHEMICAL NAME: Arsonic acid, methyl-, calcium salt
PLANT: Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 2.1 and 3.3 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Flat culture
EFFECTS: Reduced numbers or growth of rhizomes and tillers
COMMENTS: Kentucky bluegrass plants showed reduction of rhizome number and length and number of tillers; zytron, dacthal, and trifluralin produced greatest reduction; bandane and chlordane reduced rhizome development; crab-e-rad reduced number of tillers and length of rhizomes
REFERENCE: Gaskin, T.A., "Effect of Pre-Emergence Crabgrass Herbicides on Rhizome Development in Kentucky Bluegrass," J. Agron. 56(1):340-342 (1964).

<672>
CHEMICAL NAME: Arsonic acid, methyl-, Compd. with 2-heptanol and 2,2,4-trimethyl-1-pentanamine (1:1:2)
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Oat (AVENA SATIVA); Soybean (GLYCINE MAX); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: 1961--preemergence on May 31 and postemergence on June 6; 1962--preemergence on March 19 and postemergence on July 27; repeat application made one week after first treatment
EXPERIMENTAL CONDITIONS: 3-year study; randomized block design, twelve 2 X 30 ft plots with 3 replicates, silt loam soil; visual assessment of bluegrass on September 29; oat and soybean planted in soil collected March 1963 to study persistence of compound
EFFECTS: 96% crabgrass control and 91% bluegrass cover; bluegrass roots increased in length compared to control; soil residues caused reduction in height of soybean and oat
COMMENTS: Bluegrass root, measurements taken March 1963
REFERENCE: Singh, R.K.N. and R.W. Campbell, "Herbicides on Bluegrass," Weeds 13(2):170-171 (1965).

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CHEMICAL NAME: Arsonic acid, methyl-, Compd. with 2-heptanol and 2,2,4-trimethyl-1-pentanamine (1:1:2)
CHEMICAL COMMON NAME: Amine methylarsonate
PLANT: Nutsedge (CYPERUS sp.)
EXPERIMENTAL DOSE: 1.3, 2.6, and 3.8 oz/1000 sq ft
APPLICATION METHODS: Postemergence spray; 4 gal water/30 psi; repeated applications (up to 4) at monthly intervals
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Reduced numbers of shoots and tubers at all rates but repeat applications required for effective control
COMMENTS: Repeat applications of amine methylarsonate over year period resulted in significant reductions in nutsedge tubers; singly annual applications of amine methylarsonate at same rates ineffective; amine methylarsonate and disodium monomethylarsonate treatments gave moderate reductions in nutsedge tuber numbers in Bermudagrass turf one season
REFERENCE: Long, J.A., W.W. Allen, and E.C. Holt, "Control of Nutsedge in Bermudagrass Turf," Weeds 10(4):285-287 (1962).

<674>
CHEMICAL NAME: Arsonic acid, methyl-, disodium salt
CHEMICAL COMMON NAME: DSMA
PLANT: Fescue, creeping red (FESTUCA RUBRA); Bluegrass, Kentucky (POA PRATENSIS); Crabgrass (DIGITARIA ISCHAEMUM); Bentgrass, Rhode Island (AGROSTIS TENUIS); Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Spray application in water at 172 gpa rate; summer and spring treatments
EXPERIMENTAL CONDITIONS: Experiment 1--crabgrass test, application when crabgrass in 5 to 7 leaf stage to turfgrass sod; experiment 2--nutsedge test, treatments applied to bluegrass sod which contained nutsedge and to plots of only nutsedge; all plots 4 x 5 ft with 3 replications
EFFECTS: Experiment 1--2 trials, 90 and 99% crabgrass control, moderate or objectionable turfgrass injury (reduction in bentgrass and fescue); experiment 2--spring treatments gave only moderate nutsedge control by August, summer treatments gave good to excellent nutsedge control, minor turfgrass injury from summer treatments, no turfgrass injury from spring treatment
COMMENTS: Nutsedge control easier as season progresses; nutsedge easier to control on turfgrass than on bare soil; 1-inch rainfall after second spring application may have reduced effectiveness
REFERENCE: Jagschitz, J.A., "Postemergence Crabgrass and Nutsedge Control in Turfgrass with Herbicides," Proc. Northeast. Weed Sci. Soc. 29:376-381 (1975).

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CHEMICAL NAME: Arsonic acid, methyl-, disodium salt
CHEMICAL COMMON NAME: DSMA
PLANT: Bahiagrass (PASPALUM NOTATUM)
EXPERIMENTAL DOSE: 5.0 lb/A
APPLICATION METHODS: Postemergence spray; 37-50 gal/A
EXPERIMENTAL CONDITIONS: Field study; 3 locations (FL); time period--1971 and 1972; evaluation time--8 to 26 wks
EFFECTS: Moderate control of bahiagrass
COMMENTS: Combinations of diuron or simazine plus 2 applications of dalapon, 2 applications of dalapon alone or single applications of glyphosate provided best grass control; in addition, bahiagrass controlled with oxadiazon and asulam
REFERENCE: Arnold, C.E. and J.B. Aitken, "Perennial Grass Control in Pecan Orchards," Proc. South. Weed Sci. Soc. 26:231-235 (1973).

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CHEMICAL NAME: Arsonic acid, methyl-, disodium salt
CHEMICAL COMMON NAME: DSMA
PLANT: Cogongrass (IMPERATA CYLINDRICA)
EXPERIMENTAL DOSE: 4.48 and 8.96 kg/ha
APPLICATION METHODS: Postemergence spray; 300 l./ha; 0.5% surfactant; application repeated 2x or 5x
EXPERIMENTAL CONDITIONS: Field study; pure cogongrass stands in near-dormant state; time period--1971 and 1972
EFFECTS: Slight-moderate control with regrowth in one year
COMMENTS: All soil sterilants provided acceptable control; single applications of TCA and dalapon controlled cogongrass without prolonged soil sterility
REFERENCE: Dickens, R. and G.A. Buchanan, "Control of Cogongrass with Herbicides," Weed Sci. 23(3):194-197 (1975).

<677>
CHEMICAL NAME: Arsonic acid, methyl-, disodium salt
CHEMICAL COMMON NAME: DSMA
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Postemergence spray; 374 l./ha; 0.5% blended surfactant; one, two, or three applications made four, eight, or twelve weeks after cotton emergence
EXPERIMENTAL CONDITIONS: Field study; soil--dry mulch; preplant application of bensulide or trifluralin; directed postemergence application of diuron prior to test applications; time period--1971 through 1974; evaluation time--harvest
EFFECTS: Initial stunting of cotton plants and leaf discoloration with significant reduction in crop yield with all rates tested; boll components and fiber properties were also adversely affected
COMMENTS: DSMA and MSMA applied 4 or 8 weeks after emergence had less effect on cotton yield, boll components, and fiber properties than applications made 12 weeks after emergence; most single, over-the-top applications of DSMA, fluometuron, or DSMA with fluometuron 4 weeks after emergence did not affect cotton yield, boll components, or fiber properties
REFERENCE: Arle, H.F. and K.C. Hamilton, "Over-the-Top Applications of Herbicides in Cotton," Weed Sci. 24(2):166-169 (1976).

<678>
CHEMICAL NAME: Arsonic acid, methyl-, disodium salt
CHEMICAL COMMON NAME: DSMA
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Pigweed (AMARANTHUS sp.); Goosegrass (ELEUSINE INDICA); Morningglory (IPOMOEA sp.); Sida, spiny (SIDA SPINOSA)
EXPERIMENTAL DOSE: 3.36 kg/ha
APPLICATION METHODS: Postemergence spray (directed); 187 l/ha
EXPERIMENTAL CONDITIONS: Field study; soils--Sharkey clay and Bosket sandy loam
EFFECTS: Moderate control of weeds with no apparent effect on cotton; over 3 yr period, phytobland and surfactant additions had about the same effect
COMMENTS: Addition of phytobland oil to MSMA and MSMA + fluometuron, dinoseb, or norea had no significant effect on weed control when applied as directed treatments to weeds in cotton 7 to 15 cm tall; in cotton 15 to 23 cm tall, addition of phytobland oil to MSMA + linuron and MSMA + linuron + prometryne increased weed control when compared to the same treatments with surfactant
REFERENCE: Hogue, C.W., "Response of Cotton and Weeds to Herbicides with Phytobland Oil or Surfactant," Weed Sci. 22(2):97-101 (1974).

<679>
CHEMICAL NAME: Arsonic acid, methyl-, disodium salt
CHEMICAL COMMON NAME: DSMA
PLANT: Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail (SETARIA sp.); Orchard grass (DACTYLIS GLOMERATA); Alfalfa (MEDICAGO SATIVA); Canarygrass, reed (PHALARIS ARUNDINACEA); Trefoil, birdsfoot (LOTUS CORNICULATUS); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 1.1, 2.2, and 3.4 kg/ha
APPLICATION METHODS: Postemergence at pressure of 2.8 kg/cm(2) and in 376 l./ha water
EXPERIMENTAL CONDITIONS: Mexico silt loam; fall plowing, spring disking; alfalfa, trefoil, canarygrass, and orchardgrass sown in early spring; 2.1 by 6.1 m plots, randomized complete block design with 4 replications; plots harvested in early bloom stage; yields obtained by harvesting 91-cm strip, 6.1 m long fom each plot; 3 experiments
EFFECTS: Foxtails, crabgrass, and panicum controlled; barnyardgrass not ocntrolled; poor to moderate

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broadleaf weed control (pigweed, ragweed, lambsquarters, and smartweed); sown plants tolerated 2 to 3 kg/ha and increased in yield when weeds controlled
COMMENTS: Addition of 2,4-DB or bromoxynil increased broadleaf weed control; residual plant arsenic detected
REFERENCE: Peters, E.J. and S.A. Lowance, "MSMA and DSMA For Removing Grass Weeds From Grass-Legume Seedlings," Weed Sci. 22(6):578-583 (1974).

<680>
CHEMICAL NAME: Arsonic acid, methyl-, disodium salt
CHEMICAL COMMON NAME: DSMA
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 34 to 68 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight to moderate control with heavy regrowth (3 mo)
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<681>
CHEMICAL NAME: Arsonic acid, methyl-, disodium salt
CHEMICAL COMMON NAME: DSMA
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 4.0 and 6.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Slight-moderate control of nutsedge; no effect on bluegrass sod
COMMENTS: Promising results with BAS-3510, BAS-3516; DSMA; MBR-8251, and S-21634; some turf injury noted for 2,4-D, MBR-8251, and S-21634
REFERENCE: Jagschitz, J.A., "Evaluation of Herbicides for Nutsedge Control in Turfgrass," Proc. Northeast. Weed Sci. Soc. 27:331-333 (1973).

<682>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Bean, snap (PHASEOLUS VULGARIS); Rice (ORYZA SATIVA); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 22, 45, and 269 kg/ha
APPLICATION METHODS: Soil-incorporated by disking; single application
EXPERIMENTAL CONDITIONS: Field study; soils--very fine sandy loam (most crops) and Sharkey clay (rice); pH--6.5; pH alteration by annual applications of sulfuric acid; time--three years; conventional cultural practices employed
EFFECTS: Phytotoxicity evident to potato at 269 kg/ha first year only; to snap bean at 2 highest applications for 3 yr; no phytotoxicity to cotton at any rate at any time; to soybean at 269 kg/ha only but over 3 yr; to rice-plant height reduced at 269 kg/ha for 2 years; soil pH, MSMA application rate, and year of application affected yield, plant content of arsenic, and phytotoxicity
COMMENTS: Lowest MSMA application rate (22 kg/ha) 5 times greater than current registered use in cotton; plants in order of decreasing sensitivity-snap beans, rice, soybeans, potatoes, and cotton; significant reductions in yield noted at high application rates for all crops except cotton; yield response to soil pH level varied with crop
REFERENCE: Baker, R.S., W.L. Barrentine, D.H. Bowman, W.L. Hawthorne, and J.V. Pettiet," Crop Response and Arsenic Uptake Following Soil Incorporation of MSMA," Weed Sci. 24(3):322-326 (1976).

<683>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS); Soybean (GLYCINE MAX); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Radish (RAPHANUS SATIVUS); Oat (AVENA SATIVA); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 5X10(-3) and 1X10(-2) M; 0.5% surfactant (Atplus 401)
APPLICATION METHODS: Postemergence spray; glass atomizer at 140 to 350 g/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature - approx 20 C; evaluation times-- 1,2,4 and 7 da
EFFECTS: Significant growth reduction of all test species but somewhat less for soybean and morningglory
COMMENTS: Cacodylic acid more phytotoxic than MSMA, sodium arsenate, or sodium arsenite; MSMA much more effective on dicotyledonous than on monocotyledonous species; sodium arsenite and arsenate had little effect on grasses
REFERENCE: Sachs, R.M. and J.L. Michael, "Comparative Phytotoxicity Among Four Arsenical Herbicides," Weed Sci. 19(5):558-564 (1971).

<684>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Castorbean, volunteer (RICINUS COMMUNIS); Cotton (GOSSYPIUM HIRSUTUM); Sorghum, grain (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.9 and 1.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; 188 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; time period--1968 to 1970
EFFECTS: Slight to moderate control of castorbean in preemergence spray; more effective control in

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postemergence application
COMMENTS: Volunteer castorbean most effectively controlled by preemergence application of propazine in grain sorghum and by fluometuron in cotton; preplant applications of propazine not as effective as preemergence treatments.
REFERENCE: Smith, D.T., A.W. Cooley, D.O. Mooney, and A.F. Wiese, "Herbicidal Control of Volunteer Castorbean," Weed Sci. 20(4):338-340 (1972).

<685>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Fescue, creeping red (FESTUCA RUBRA); Bluegrass, Kentucky (POA PRATENSIS); Crabgrass (DIGITARIA ISCHAEMUM); Bentgrass, Rhode Island (AGROSTIS TENUIS)
EXPERIMENTAL DOSE: 2.0 and 2.7 lb/A
APPLICATION METHODS: Spray application in water at rate of 172 gpa; 3 July treatments 10 days apart, 2.7 lb/A initial application
EXPERIMENTAL CONDITIONS: 4 x 5 ft plots with 3 replications; turfgrass injury assessed in July, August, and September; crabgrass control assessed in September
EFFECTS: 96% crabgrass control; moderate injury noted--reduction in bentgrass and fescue
REFERENCE: Jagschitz, J.A., "Postemergence Crabgrass and Nutsedge Control in Turfgrass with Herbicides," Proc. Northeast. Weed Sci. Soc. 29:376-381 (1975).

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CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: Daconate
PLANT: Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 6.0 pt/A
APPLICATION METHODS: Postemergence spray; 10 and 20 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Reduced yield
COMMENTS: Karmex-2,4-D ester appeared to cause depression in cane yields but compensated for this by an improvement in juice quality; overall improvement in cane yields and juice quality resulting from Gesapax-Actril-D treatment quite noticeable as it outyielded all others; only Daconate seemed to result in noticeable sugar yield depression primarily because of its adverse effect on juice quality; dalapon and gramoxone in combination with 2,4-D ester did not seriously affect yields
REFERENCE: Maddan, W.L. and E.M. Christie, "Weed Control at Monymusk," Jamaican Assoc. Sugar Tech. 33:76-82 (1972).

<687>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-2)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<688>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Oat, wild (AVENA FATUA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 2.2, 4.5, 6.7 and 9.0 kg/ha
APPLICATION METHODS: Postemergence application delivered by water at 374 l/ha; formulation--Ansar 529 H.C.
EXPERIMENTAL CONDITIONS: Five field experiments--2 with bluegrass and 3 with ryegrass; plot size--2.4 by 6.0m; randomized complete block design with 3 replications for each experiment; bluegrass rows 30.5 cm apart, ryegrass rows 35.6 cm apart
EFFECTS: Bluegrass experiments--all rates except 2.2 kg/ha effectively controlled wild oat, 4.5 kg/ha as effective as higher rates, 6.7 and 9.0 kg/ha caused slight temporary leaf burn; ryegrass experiments--effective wild oat control at all rates when MSMA applied in April, mid-March applications not as effective, no visible damage to ryegrass
COMMENTS: 3 to 4 weeks before visible injury to wild oat developed; some MSMA treatments applied after ryegrass reached boot stage decreased seed production in cultivar Reveille; MSMA activity possibly slowed by cool weather and frequent rains during experiments
REFERENCE: Lee, W.O., "Wild Oat Control in Kentucky Bluegrass and Perennial Ryegrass," Weed Sci. 23(6):525-528 (1975).

<689>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Bermudagrass, common (CYNODON DACTYLON); Nutsedge, purple (CYPERUS ROTUNDUS); Bindweed, field (CONVOLVULUS ARVENSIS); Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: Experiment 1--4 to 16 lb per season; experiment 2--1, 2, 4 and 8 lb/A
APPLICATION METHODS: Experiment 1--2 lb/A repeated application; experiment 2--fall, spring and early summer applications

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EXPERIMENTAL CONDITIONS: Experiment 1--weed control evaluated on basis of commercial control (70 to 100%); experiment 2--weed control evaluated on basis of commercial control (70 to 100%), 3-4 replications, only plant tested was birdweed
EFFECTS: Experiment 1--unacceptable control of bermuda grass, nutsedge and bindweed but acceptable control of johnson grass at 4 to 8 lb, acceptable control of johnson grass and nutsedge but variable results with bindweed and unacceptable control of bermuda grass at 8 to 16 lb; experiment 2--unacceptable bindweed control at all rates
COMMENTS: Article primarily concerns glyphosate as effective perennial weed killer--described as being nonselective; results of 3 studies presented only in tabular form; experiment 2 results reported on basis of average values
REFERENCE: Lange, A., H. Kempen, W. McHenry, and O. Leonard, "Roundup--A New Perennial Weed Killer," Calif. Agric. 27(2):6-7 (1973).

<690>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Bahiagrass (PASPALUM NOTATUM)
EXPERIMENTAL DOSE: 4.5 lb/A
APPLICATION METHODS: Postemergence spray; 37-50 gal/A
EXPERIMENTAL CONDITIONS: Field study; 3 locations (FL); time period--1971 and 1972; evaluation time--8 to 26 wks
EFFECTS: Slight to moderate control of bahiagrass
COMMENTS: Combinations of diuron or simazine plus 2 applications of dalapon, 2 applications of dalapon alone or single applications of glyphosate provided best grass control; in addition, bahiagrass controlled with oxadiazon and asulam
REFERENCE: Arnold, C.E. and J.B. Aitken, "Perennial Grass Control in Pecan Orchards," Proc. South. Weed Sci. Soc. 26:231-235 (1973).

<691>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Johnson grass (SORGHUM HALEPENSE); Signalgrass, broadleaf (BRACHIARIA PLATYPHYLLA); Morningglory, bigroot (IPOMOEA PANDINATA); Trumpet creeper (CAMPSIS RADICANS); Sida, spiny (SIDA SPINOSA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 gal/A; 30 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; minimum tillage, stale seedbed, and no tillage experiments; weeds treated and crop planted 13 to 35 days after herbicide application
EFFECTS: Not highly effective against test species and moderate stunting of soybean after 90 days
COMMENTS: Preplant and at-planting applications provided excellent control of johnsongrass and all other weeds; addition of residual preemergence herbicides, cultivation, and post-directed applications of glyphosate to 18-24 inch soybeans provided acceptable seedling control
REFERENCE: Connell, J.T. and C.W. Derting, "Glyphosate Performance on Johnson Grass and Associated Weed Species in No-Tillage Soybeans," Proc. South. Weed Sci. Soc. 26:51-58 (1973).

<692>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Bermudagrass, common (CYNODON DACTYLON); Centipede grass (EREMOCHLOA OPHIUROIDES); St. Augustine's grass (STENOTAPHRUM SECUNDUN)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Field--repeated applications at 3 and 4 weeks after sprigging at 1 and 2 lb/A; greenhouse--1, 2, or 3 applications at 2 lb/A; nonionic surfactant added to each treatment
EXPERIMENTAL CONDITIONS: Field--centipede grass only, Cecil sandy clay loam; greenhouse--all 3 grasses, Helena sandy loam, applications 31, 39, and 51 days after sprigging; randomized block design with 4 replications, visual ratings 1, 3, 5, and 8 weeks after initial application
EFFECTS: Field--centipede grass completely killed at either rate; greenhouse--centipede and St. Augustine grasses severely affected, Tifway bermudagrass quality not reduced by single or multiple applications
COMMENTS: St. Augustine grass slightly more tolerant than centipede grass
REFERENCE: Johnson, B.J., "Tolerance of Turfgrasses to Postemergence Treatments of MSMA," Ga. Agric. Res. 14(2):7-8 (1972).

<693>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Postemergence spray; 374 l./ha; 0.5% blended surfactant; one, two, or three applications made four, eight, or twelve weeks after cotton emergence
EXPERIMENTAL CONDITIONS: Field study; soil--dry mulch; preplant application of bensulide or trifluralin; directed postemergence application of diuron prior to test applications; time period--1971 through 1974; evaluation time--harvest
EFFECTS: Initial stunting of cotton plants and leaf discoloration with significant reduction in crop yield with all rates tested; boll components and fiber properties were also adversely affected
COMMENTS: DSMA and MSMA applied 4 or 8 weeks after emergence had less effect on cotton yield, boll components, and fiber properties than applications made 12 weeks after emergence; most single, over-the-top applications of DSMA, fluometuron, or DSMA with fluometuron 4 weeks after emergence did not affect cotton yield, boll components, or fiber properties
REFERENCE: Arle, H.F. and K.C. Hamilton, "Over-the-Top Applications of Herbicides in Cotton," Weed Sci. 24(2):166-169 (1976).

<694>
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CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Bermudagrass (CYNODON sp.); Goosegrass (ELEUSINE INDICA)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 374 l./ha; 0.2% non-ionic surfactant; MSMA applied up to 3X at one week intervals
EXPERIMENTAL CONDITIONS: Field study; soil--Vertic Ustropets (Waipahu silty clay)
EFFECTS: Slight control of goosegrass after 2 or 3 applications with slight initial injury to bermudagrass
COMMENTS: Excellent goosegrass control obtained when s-triazine herbicides used, followed by two or three applications of MSMA; three applications of MSMA alone ineffective in controlling mature goosegrass; no phytotoxicity observed from any herbicide treatment on common bermudagrass; Tifgreen discolored by all herbicide treatments, however, the injury was of short duration
REFERENCE: Murdoch, C.L. and D. Ikeda, "Goosegrass Control in Bermudagrass Turf with Combinations of MSMA and S-Triazines," Agron. J. 66:712-714 (1974).

<695>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Smutgrass (SPOROBOLUS POIRETII); Bermudagrass, common (CYNODON DACTYLON); Carpetgrass (AXONOPUS AFFINIS)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l./ha; one, two, or three applications
EXPERIMENTAL CONDITIONS: Field study; soil--Tifton loamy sand; warm and cool weather applications studied; evaluation time--6 to 12 wk
EFFECTS: Moderate to effective smutgrass control at 2.2 kg/ha (three applications) but turfgrasses damaged; no advantage to combining MSMA and 2,4-D; warm weather study only
COMMENTS: MSMA applied alone or in combination with 2,4-D in each of three applications controlled at least 70% of smutgrass in two of three experiments; common bermudagrass showed signs of atrazine injury during first 6 weeks after treatment but injury not evident following year; MSMA alone or in combination with 2,4-D killed carpetgrass in all experiments
REFERENCE: Johnson, B.J., "Smutgrass Control with Herbicides in Turfgrasses," Weed Sci. 23(2):87-90 (1975).

<696>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Johnson grass (SORGHUM HALEPENSE); Guineagrass (PANICUM MAXIMUM); Nutsedge, purple (CYPERUS ROTUNDUS); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Postemergence spray; 40 gal/A; 40 psi; directed
EXPERIMENTAL CONDITIONS: Field study; nursery
EFFECTS: Slight to moderate control of weeds even with repeat applications (2 or 3)
COMMENTS: Glyphosate gave excellent control of rhizome johnsongrass, established guineagrass, and purple nutsedge; repeated applications of glyphosate provided excellent control of above mentioned species and bermudagrass up to 5 months after initial treatment
REFERENCE: Klosterboer, A.D., "Glyphosate and MSMA for Control of Perennial Weeds in Texas Citrus Orchards," Rio Grande Valley Hort. Soc. J. 27:63-66 (1973).

<697>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Pigweed (AMARANTHUS sp.); Goosegrass (ELEUSINE INDICA); Morningglory (IPOMOEA sp.); Sida, spiny (SIDA SPINOSA)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Postemergence spray (directed); 187 l/ha
EXPERIMENTAL CONDITIONS: Field study; soils--Sharkey clay and Bosket sandy loam
EFFECTS: Moderate control of weeds with no apparent effect on cotton; over 3 yr period, phytobland and surfactant additions had about the same effect
COMMENTS: Addition of phytobland oil to MSMA and MSMA + fluometuron, dinoseb, or norea had no significant effect on weed control when applied as directed treatments to weeds in cotton 7 to 15 cm tall; in cotton 15 to 23 cm tall, addition of phytobland oil to MSMA + linuron and MSMA + linuron + prometryne increased weed control when compared to the same treatments with surfactant
REFERENCE: Hoque, C.W., "Response of Cotton and Weeds to Herbicides with Phytobland Oil or Surfactant," Weed Sci. 22(2):97-101 (1974).

<698>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l/ha; one or two applications
EXPERIMENTAL CONDITIONS: Field study; four locations in Georgia
EFFECTS: Moderate control of weeds but two applications required; no adverse effects on Bermudagrass
COMMENTS: Metribuzin and methazole as single treatments controlled 82 and 87% goosegrass, respectively; repeated treatments needed for similar control of large crabgrass; these treatments did not permanently injure bermudagrass or centipedegrass
REFERENCE: Johnson, B.J., "Turfgrass Tolerance and Weed Control with Methazole and Metribuzin," Weed Sci. 24(5):512-519 (1976).

<699>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 3.0 kg/ha
APPLICATION METHODS: Postemergence spray application with soil incorporation by rototilling; 335 l/ha
EXPERIMENTAL CONDITIONS: Field application; removal of surviving tubers to greenhouse; evaluation time--6 wk (count of tuber germination)
EFFECTS: Moderately reduced tuber germination
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<700>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 2.25 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha; 0.5% Biofilm added
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: Reduced tuber numbers and dry weight; no recovery up to 43 days
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<701>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail (SETARIA sp.); Orchard grass (DACTYLIS GLOMERATA); Alfalfa (MEDICAGO SATIVA); Canarygrass, reed (PHALARIS ARUNDINACEA); Trefoil, birdsfoot (LOTUS CORNICULATUS); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 1.1, 2.2, and 3.4 kg/ha
APPLICATION METHODS: Postemergence at pressure of 2.8 kg/cm(2) and in 376 l./ha water
EXPERIMENTAL CONDITIONS: Mexico silt loam; fall plowing, spring disking; alfalfa, trefoil, canarygrass, and orchardgrass sown in early spring; 2.1 by 6.1 m plots, randomized complete block design with 4 replications; plots harvested in early bloom stage; yields obtained by harvesting 91-cm strip, 6.1 m long fom each plot; 3 experiments
EFFECTS: Foxtails, crabgrass, and panicum controlled; barnyard-grass not controlled; broodleaved weeds (pigweed, ragweed, lambsquarters, and smartweed) controlled only in experiment 2; sown plants tolerated 2 to 3 kg/ha and increased in yield when weeds controlled
COMMENTS: Experiment 2 broadleaf weed control--control possibly due to higher temperature (27 C) at time of spraying than in other experiments (16 to 18 C); addition of 2,4-DB or bromoxynil increased broadleaf weed control; residual plant arsenic detected
REFERENCE: Peters, E.J. and S.A. Lowance, "MSMA and DSMA For Removing Grass Weeds From Grass-Legume Seedlings," Weed Sci. 22(6):578-583 (1974).

<702>
CHEMICAL NAME: Arsonic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: MSMA
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Bermudagrass, common (CYNODON DACTYLON); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 0.6, 1.1, 1.7, 2.2, and 3.3 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l./ha; one or two applications
EXPERIMENTAL CONDITIONS: Field study; four locations in Georgia over three year period (1972 to 1974)
EFFECTS: Effective control of crabgrass at 1.7 kg/ha MSMA (single application) in two of three years; 3.3 kg/ha (two applications) required for goosegrass control; slight injury to Bermudagrass but recovery in two-three weeks
COMMENTS: Large crabgrass controlled satisfactorily at Griffin in 1972 and 1973 with single application of MSMA, however, repeated applications required for similar control at Griffin in 1974 and at Blairsville in 1973 and 1974
REFERENCE: Johnson, B.J., "Postemergence Control of Large Crabgrass and Goosegrass in Turf," Weed Sci. 25(3):404-409 (1975).

<703>
CHEMICAL NAME: Arsonic acid, methyl-,disodium salt
CHEMICAL COMMON NAME: DMA
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Oat (AVENA SATIVA); Soybean (GLYCINE MAX); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 4.5 lb/A
APPLICATION METHODS: 1961--preemergence on May 31 and postemergence on June 6; 1962--preemergence on March 19 and postemergence on July 27; repeat application made one week after first treatment
EXPERIMENTAL CONDITIONS: 3-year study; randomized block design, twelve 2 X 30 ft plots with 3 replicates, silt loam soil; visual assessment of bluegrass on September 29; oat and soybean planted in soil collected

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March 1963 to study persistence of compound
EFFECTS: 95% crabgrass control; 86% bluegrass cover; residues caused minor height reduction in oat and more pronounced reduction in soybean height; no significant increase in root length of bluegrass
COMMENTS: Bluegrass root, measurements taken March 1963
REFERENCE: Singh, R.K.N. and R.W. Campbell, "Herbicides on Bluegrass," Weeds 13(2):170-171 (1965).

<704>
CHEMICAL NAME: Arsonic acid, propyl ester, calcium salt
CHEMICAL COMMON NAME: Calcium propyl arsonate
PLANT: Crabgrass (DIGITARIA sp.); Bentgrass (AGROSTIS sp.); Bluegrass, Kentucky (POA PRATENSIS); Fescue (FESTUCA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Clover, white (TRIFOLIUM REPENS)
EXPERIMENTAL DOSE: 0.75 and 1.50 lb/1000 sq ft; attaclay formulation
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective crabgrass control and little or no adverse effect on clover or turfgrasses except slight reduction in seed germination
COMMENTS: Where applied to greenhouse flats immediately after seeding rows of turfgrasses and crabgrasses, chemicals allowed turfgrass seeds to sprout and grow normally while crabgrass died within few day after sprouting
REFERENCE: Gallagher, J.E. and P.J. Otten, "New Organic Arsenical Materials for Pre-Emergence Crabgrass Control," Hormolog. 3(1):11-13 (1961).

<705>
CHEMICAL NAME: Arsonic acid, propyl ester, calcium salt
CHEMICAL COMMON NAME: Calcium propyl arsenate
PLANT: Bluegrass, annual (POA ANNUA); Bluegrass, Kentucky (POA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Fescue, creeping red (FESTUCA RUBRA); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 44.0 lb/A
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study--emergence of seedlings (germination) studied in flat culture; evaluation time--seed planted up to 93 days after herbicide application
EFFECTS: Reduced germination of all species except tall fescue and ryegrass
COMMENTS: With few exceptions, herbicides retarded stand and vigor of turfgrasses seeded in turf killed with methyl bromide; chlordane was least and commercial arsenic complex plus 7% N most toxic to young seedlings; seedlings of Merion Kentucky bluegrass most resistent to herbicide injury; no appreciable decrease in original turf density noted except for arsenic complex material which severely injured bluegrass turf
REFERENCE: Juska, F.V. and A.A. Hanson, "Effect of Preemergence Crabgrass Herbicides on Seedling Emergence of Turfgrass Species," Weeds 12(2):97-101 (1964).

<706>
CHEMICAL NAME: Ascorbic acid, L-
CHEMICAL COMMON NAME: Ascorbic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS); Willow (SALIX sp.); Oat (AVENA SATIVA); Cress (LEPIDIUM SATIVUM); Mustard, white (BRASSICA ALBA)
EXPERIMENTAL DOSE: 1:1000 to 1:500,000
APPLICATION METHODS: Solution-saturated cotton placed on petiole of intact tomato and bean plants; willow shoots placed in solutions; pre-germinated seed (36 hr) of oats, cress, and mustard placed in test solutions
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No effect on tomato and bean petiole at 1:1000; increased rooting of willow; stimulated growth of germinating oat, cress, and mustard seedlings
COMMENTS: Heteroauxin and homologue beta-indolylpropionic acid caused epinastic curvatures of tomato, but not other indole derivatives of ascorbic acid; all compounds found effective in stimulating root development in willow branches, ascorbic being also effective for shoots; vitamin C produced maximum effect, closely followed by heteroauxin and more remotely by the other indole derivatives; only low concentrations stimulating; high concentrations lethal or at least retarding
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<707>
CHEMICAL NAME: Attapulgite, mercury salt
CHEMICAL COMMON NAME: Mercury-Attaclay
PLANT: Crabgrass (DIGITARIA sp.); Bentgrass, creeping (AGROSTIS PALUSTRIS); Bentgrass, Rhode Island (AGROSTIS TENUIS)
EXPERIMENTAL DOSE: 1:5,000; 10 gal/1000 sq ft; applied 10 day intervals
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No control of crabgrass and no damage to golf turf grasses
COMMENTS: Puraturf and Puratized 806, gave good control of crabgrass; twenty-two different treatments used but most had no appreciable effect on crabgrass
REFERENCE: DeFrance, J.A., "Water-Soluble Mercurials for Crabgrass Control in Turf," Greenkeepers' Rept. 15(1):30-31 (1947).

<708>
CHEMICAL NAME: Attapulgite, mercury salt
CHEMICAL COMMON NAME: DMA
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bluegrass, annual (POA ANNUA); Fescue, creeping red (FESTUCA RUBRA); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 15.0 lb/A
APPLICATION METHODS: Applied to soil surface as preemergence spray; 35 to 40 psi
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; herbicides applied and seed planted at monthly intervals to determine residual effect; time period--1958 and 1959
EFFECTS: No adverse effect on turfgrasses
COMMENTS: In pre-emergence crabgrass control study in turf, no significant differences found between calcium arsenate and arsenic complex + 7% nitrogen with respect to time of application; these herbicides effectively controlled crabgrass; however, arsenic complex + 7% nitrogen injured turf; fenac formulations did not satisfactorily control crabgrass and severely injured turf; chlordane most effective when applied in the spring but did not satisfactorily control crabgrass
REFERENCE: Juska, F.V., "Pre-emergence Herbicides for Crabgrass Control and Their Effects on Germination of Turfgrass Species," Weeds 9(1):137-144 (1961).

<709>
CHEMICAL NAME: Azepine-1-carbothioic acid, hexahydro-1H-, S-ethyl ester
CHEMICAL COMMON NAME: Molinate
PLANT: Rice (LEERSIA ORYZOIDES); Nutsedge, purple (CYPERUS ROTUNDUS); Junglerice (ECHINOCHLOA COLONUM)
EXPERIMENTAL DOSE: 3 and 4 kg/ha
APPLICATION METHODS: Knapsack sprayer application of 670 dm(3)/ha volume; granular application also
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; 3 x 5 m plots; visual toxicity and weed control ratings
EFFECTS: 3 kg/ha applied 9 days after seeding--E. COLONUM susceptible, C. ROTUNDUS resistant; 4 kg/ha preemergence--same results; 3 kg/ha applied 9 days after rice emergence (granular)--same results; 4 kg/ha preplanting incorporated--no rice toxicity, C. ROTUNDUS and R. EXALTATA resistant, satisfactory control of L. CHINENSIS and E. COLONUM
COMMENTS: Effects on all weeds not specifically reported
REFERENCE: Aryeetey, A.N., "Chemical Weed Control in Rice in Ghana," Ghana J. Agric. Sci. 6:199-204 (1973).

<710>
CHEMICAL NAME: Azepine-1-carbothioic acid, hexahydro-1H-, S-ethyl ester
CHEMICAL COMMON NAME: Molinate
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Broadleaf weeds
EXPERIMENTAL DOSE: 3.4 and 5.6 kg/ha
APPLICATION METHODS: Preplanting treatments incorporated to 7.6 cm depth; September application
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Serious injury to clover and alfalfa; broadleaf weeds effectively controlled
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<711>
CHEMICAL NAME: Azepine-1-carbothioic acid, hexahydro-1H-, S-ethyl ester
CHEMICAL COMMON NAME: Molinate
PLANT: Pea, sweet (PISUM SATIVUM); Amaranth (AMARANTHUS VIRIDIS); (DIGERA ARVENSIS); (BOERHAAVIA DIFFUSA); (BOERHAAVIA REPANDA); Dayflower (COMMELINA BENGHALENSIS); (PENNISETUM TYPHOIDES); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0, 10.0, and 100 ppm
APPLICATION METHODS: Postemergence spray to runoff
EXPERIMENTAL CONDITIONS: Greenhouse study (presumed); pot culture
EFFECTS: Slight to moderate damage to all plants except B. DIFFUSA and C. ROTUNDUS (no damage)
COMMENTS: Triazine and urea herbicides caused appreciable stimulation of stomatal opening within two hours; amides caused rapid closure of open stomata; thiocarbamates exhibited differential response
REFERENCE: Rama Das, V.S. and M. Santakumari, "Stomatal Behaviour Towards Four Classes of Herbicides as a Basis of Selectivity to Certain Weeds and Crop Plants," Proc. Indian Acad. Sci. 82B(3):108-116 (1975).

<712>
CHEMICAL NAME: Azepine-1-carbothioic acid, hexahydro-1H-, S-ethyl ester
CHEMICAL COMMON NAME: Molinate
PLANT: Pea, sweet (PISUM SATIVUM); Amaranth (AMARANTHUS VIRIDIS); (DIGERA ARVENSIS); (BOERHAAVIA DIFFUSA); (BOERHAAVIA REPANDA); Dayflower (COMMELINA BENGHALENSIS); (PENNISETUM TYPHOIDES); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0, 10.0, and 100 ppm
APPLICATION METHODS: Postemergence spray to runoff
EXPERIMENTAL CONDITIONS: Greenhouse study (presumed); pot culture
EFFECTS: Slight to moderate damage to all plants except B. DIFFUSA and C. ROTUNDUS (no damage)
COMMENTS: Triazine and urea herbicides caused appreciable stimulation of stomatal opening within two hours; amides caused rapid closure of open stomata; thiocarbamates exhibited differential response
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CHEMICAL NAME: Aziridine
CHEMICAL COMMON NAME: Ethyleneimine
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.01 to 0.04%
APPLICATION METHODS: Immersion of seeds in assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; mutation rate studied for up to 3 generations
EFFECTS: Increased mutation rate
COMMENTS: Found most efficient mutagen; 50.8% of the M(2) progenies segregated for mutants; after treatment with 740 rad of fast neutrons 30.5% of progenies contained mutants, and 10 kR gamma-rays gave 6.2% progenies with mutants
REFERENCE: Khvostova, V.V., V.S. Mozhaeva, N.S. Aigaes, and S.A. Valeva, "Mutants Induced by Ionizing Radiation and Ethyleneimine in Winter Wheat," Mut. Res. 2:339-344 (1965).

<714>
CHEMICAL NAME: Aziridine, 1,1',1"-phosphinothioylidynetris-
CHEMICAL COMMON NAME: Thio-TEPA
PLANT: Rye (SECALE CEREALE); Wheat (TRITICUM AESTIVUM); Wheat, durum (TRITICUM DURUM)
EXPERIMENTAL DOSE: 0.05 to 1.8 g/l.
APPLICATION METHODS: Seeds germinated in 10 ml test solution
EXPERIMENTAL CONDITIONS: Seeds--diploid and tetraploid rye, tetraploid and common hexaploid wheat; 100 seeds placed in Petri dishes in thio-TEPA solutions; after 4 days at room temperature, germinated seeds counted; length of plantlet measured after fourth day; motality equated to control; 100% germination equated to seeds sprouted in control
EFFECTS: 50% germination of tetraploid wheat at 0.25 g/l., of hexaploid wheat at 1.1 g/l., of diploid rye at 0.5 g/l. and of tetraploid rye at 1.1 g/l.; 0.05 g/l. reduced plantlet length about half compared with control, greater concentrations reduced length further but less dramatically
REFERENCE: Simon, Z. and I. Badilescu, "Sensibility Towards an Alkylating Agent of Seeds of Different Ploidies," Biochem. Biophys. Res. Commun. 21(1):1-5 (1965).

<715>
CHEMICAL NAME: Aziridine, 1,1',1"-phosphinothioylidynetris-
CHEMICAL COMMON NAME: Thio-TEPA
PLANT: Rye (SECALE CEREALE); Wheat, durum (TRITICUM DURUM); Wheat, diploid (TRITICUM MONOCOCCUM); Wheat (TRITICUM AESTIVUM); Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 0.2 to 5.0 g/l.
APPLICATION METHODS: Seed treatment with 10 ml test solution
EXPERIMENTAL CONDITIONS: Seeds placed in petri dishes containing 10 ml test solution; dishes covered at room temperature for 4 days then germinated seeds counted; mortality compared to control reported; ploidy versus toxic effects monitored
EFFECTS: 43.9 and 19.0% mortality in diploid and tetraploid rye respectively at 0.8 g/l.; 100 and 37% mortality in tetraploid and hexaploid wheat respectively at 1.0 g/l.; 54.4, 50.0, and 39.2% mortality in diploid, triploid, and tetraploid beet respectively at 5.0 g/l.
COMMENTS: T. MONOCOCCUM, diploid wheat; T. DURUM, tetraploid wheat; T. AESTIVUM, hexaploid wheat; in general, increase in ploidy accompanied by increased resistance toward cytotoxicity
REFERENCE: Badilescu, I., S. Botis-Simon, and Z. Simon, "Response of Some Seeds of Different Ploidies Towards Alkylating Agents and Some Common Phytotoxica," Rev. Roum. Biochim. 4(4):279-285 (1967).

<716>
CHEMICAL NAME: Aziridine, 1,1',1"-phosphinylidynetris-
CHEMICAL COMMON NAME: APO
PLANT: Broom corn (SORGHUM VULGARE); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.025 to 0.30% solutions; 0.1% wetting agent
APPLICATION METHODS: Postemergence spray to run-off
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--2 wk
EFFECTS: Growth reduction
COMMENTS: Inhibited growth of seedling grasses with concomitant accumulation of anthocyanins and exudation of sap; treated plants deficient in cell-wall materials; percentage of other metabolic products, such as protein and simple sugars, increased; suggest that compound inhibited cellular expansion by cross-linking with cellulose in plant cell wall
REFERENCE: Leasure, J.K. and T.W. Hommsen, "Growth-Inhibiting Action of Tris(1-Aziridinyl)-Phosphine Oxide in Grasses," Science 153:1659 (1966).

<717>
CHEMICAL NAME: Aziridine, 1,1',1"-phosphinylidynetris-
CHEMICAL COMMON NAME: APO
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 1 X 10(-2)M
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Inhibited bud formation and bud length in three most proximal root sections
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

<718>
CHEMICAL NAME: Azirino[2',3':3,4]pyrrolo [1,2-alpha] indole-4, 7-dione, 6-amino-8-[[(aminocarbonyl)oxyl]methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-me thyl-, [1aR-(1a alpha, 8 beta, 8a alpha, 8b beta)]
CHEMICAL COMMON NAME: Mitomycin C
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 50 to 300 micro g/ml
APPLICATION METHODS: Immersion in assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated bean seedling leaves; evaluation time--12 to 14 hr
EFFECTS: Inhibited protein synthesis and chloroplast formation
COMMENTS: Inhibitors affected RNA synthesis blocked 2nd stage and arrested proplastid conversion to chloroplasts; plastid division also seemed to stop; inhibition of DNA synthesis blocked 1st stage; proplastids, escaping the stage of division, directly converted to chloroplasts which were, similarly to those formed in the first case, incapable of division
REFERENCE: Beridze, T.G., M.S. Odintsova, N.A. Cherkashina, and M.M. Sissakian, "The Effect of Nucleic Acid Synthesis Inhibitors on the Chlorophyll Formation by Etiolated Bean Leaves," Biochem. Biophys. Res. Comm. 23(5):683-690 (1966).

<719>
CHEMICAL NAME: Azuleno [4,5-b] Furan-2,9-dione, 3, 3a,4,5,6,6a,9a,9b-octahydro-6, 9a-dimethyl-3-methylene, [3aS-(3a alpha, 6 beta, 6a alpha, 9a beta, 9b alpha)]
CHEMICAL COMMON NAME: Ambrosin
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Growth reduction of wheat but no blockage of GA-stimulated pea growth
COMMENTS: Of 524 compounds examined, 71 were found highly active and further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<720>
CHEMICAL NAME: Azuleno [6,5-b] Furan-2,5-dione, 3,3a,4,4a,7a,8,9,9a-octahydro-4-hydroxy-4a, 8-dimethyl-3-methylene-, [3aS-(3a alpha, 4 alpha, 4a beta, 7a alpha, 8 alpha, 9a alpha]-
CHEMICAL COMMON NAME: Helenalin
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Growth reduction of wheat but no blockage of GA-stimulated pea growth
COMMENTS: Of 524 compounds examined, 71 were found highly active and further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<721>
CHEMICAL NAME: B-D-erythro-Hex-2-enopyranuronic acid, 4-[(3-amino-5-(aminoiminomethyl)methylamino)-1-oxopentyl)amino] -1-(4-amino-2-oxo-1(2H)-pyrimidinyl)-1,2,3,4-tetradeoxy-,(S)-
CHEMICAL COMMON NAME: Blasticidin S
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1x10(-4) to 5x10(-5)M
APPLICATION METHODS: Leaf injection
EXPERIMENTAL CONDITIONS: Environmental chamber; conditions for development of stem rust of wheat; temperature--19 C
EFFECTS: Leaf necrosis
COMMENTS: Phytotoxic to wheat leaves at concentrations that had no effect on fungal growth during first 2 days after treatment; at later stages, extensive host necrosis, resulting from phytotoxicity of this antibiotic, inhibited rust development
REFERENCE: Kim, W.K., R. Rohringer, D.J. Samborski, and N.K. Howes, "Effect of Blasticidin S, Ethionine, and Polyoxin D on Stem Rust Development and Host-Cell Necrosis in Wheat Near-Isogenic for Gene Sr6," Can. J. Bot. 55(5):568-573 (1977).

<722>
CHEMICAL NAME: Bandane
CHEMICAL COMMON NAME: Bandane
PLANT: Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 22.4, 44.8 and 89.6 kg/ha
APPLICATION METHODS: Granular application with calibrated 0.9 m wide lawn spreader; preemergence application in July; first year applications of 44.8 and 89.6 kg/ha, second and third year applications of 22.4 and 44.8 kg/ha
EXPERIMENTAL CONDITIONS: Emory clay loam soil; 4 year experiment with fourth year used to determine recovery — no herbicide application; randomized complete block design with 3 replications and a check; plots measured 0.9 by 4.8 m with 0.3-m border between plots; no border between replications; injury determined by sod loss and foliar damage; lowest rates of application halved, plots treated with high rates applied

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four times
EFFECTS: First year -- no foliage burn or sod loss; second year -- moderate foliar browning with associated sod loss; third year -- moderate foliar browning and sod loss; fourth year -- continued increased phytotoxicity from residues
COMMENTS: Most persistent loss of sod occurred with bandane and terbutol; generally, consecutive annual applications increased foliage damage and loss of sod; high degree of residue perrsistence
REFERENCE: Callahan, L.M., "Phytotoxicity of Herbicides to a Tifgreen Bermudagrass Green," Weed Sci. 24(1):92-98(1976).

<723>
CHEMICAL NAME: Bandane
PLANT: Bluegrass, annual (POA ANNUA); Bluegrass, Kentucky (POA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Fescue, creeping red (FESTUCA RUBRA); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 50 lb/A
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study--emergence of seedlings (germination) studied in flat culture; evaluation time--seed planted up to 93 days after herbicide application
EFFECTS: Reduced germination of all species
COMMENTS: With few exceptions, herbicides retarded stand and vigor of turfgrasses seeded in turf killed with methyl bromide; chlordane was least and commercial arsenic complex plus 7% N most toxic to young seedlings; seedlings of Merion Kentucky bluegrass most resistent to herbicide injury; no appreciable decrease in original turf density noted except for arsenic complex material which severely injured bluegrass turf
REFERENCE: Juska, F.V. and A.A. Hanson, "Effect of Preemergence Crabgrass Herbicides on Seedling Emergence of Turfgrass Species," Weeds 12(2):97-101 (1964).

<724>
CHEMICAL NAME: Banvel-B-12D
CHEMICAL COMMON NAME: Banvel-B-12-D
PLANT: Plants
EXPERIMENTAL DOSE: 1 gal/24 gal/A
APPLICATION METHODS: Postemergence application; fuel oil carrier, Microfoil boom; 12-48 gal/A oil; 35 psi
EXPERIMENTAL CONDITIONS: Field study; dormant season
EFFECTS: Slight eradication of brush
COMMENTS: On basis of effectiveness, several combined mixes of herbicides appear about as effective as 2,4,5-T in brush eradication despite considerable variation in effects
REFERENCE: Chappell, W.E., "Herbicidal Mixtures for the Control of Mixed Brush in Right-of-Way," Proc. South. Weed Sci. Soc. 26: 306-309 (1973).

<725>
CHEMICAL NAME: Banvel-B-12T
CHEMICAL COMMON NAME: Banvel-B-12-T
PLANT: Plants
EXPERIMENTAL DOSE: 1 gal/24 gal/A
APPLICATION METHODS: Postemergence application; fuel oil carrier, Microfoil boom; 12-48 gal/A oil; 35 psi
EXPERIMENTAL CONDITIONS: Field study; dormant season
EFFECTS: Moderate to effective eradication of brush
COMMENTS: On basis of effectiveness, several combined mixes of herbicides appear about as effective as 2,4,5-T in brush eradication despite considerable variation in effects
REFERENCE: Chappell, W.E., "Herbicidal Mixtures for the Control of Mixed Brush in Right-of-Way," Proc. South. Weed Sci. Soc. 26:306-309 (1973).

<726>
CHEMICAL NAME: Banvel-B-12T
CHEMICAL COMMON NAME: Banvel B-12-T
PLANT: Maple, red (ACER RUBRUM); Oak, red (QUERCUS RUBRA); Pine (PINUS sp.); Birch (BETULA sp.); Gum, sweet (LIQUIDAMBAR STYRACIFLUA); Blackberry (RUBUS sp.); Privet (LIGUSTRUM sp.); Dogwood (CORNUS sp.)
EXPERIMENTAL DOSE: 1 gal/A
APPLICATION METHODS: Postemergence application; fuel oil carrier, Microfoil boom; 12-48 gal/A oil; 35 psi
EXPERIMENTAL CONDITIONS: Field study; dormant season
EFFECTS: Effective eradication of pine, birch, sweet gum, blackberry and dogwood; moderate eradication of red maple, red oak, and privet
COMMENTS: On basis of effectiveness, several combined mixes of herbicides appear about as effective as 2,4,5-T in brush eradication despite considerable variation in effects
REFERENCE: Chappell, W.E., "Herbicidal Mixtures for the Control of Mixed Brush in Right-of-Way," Proc. South. Weed Sci. Soc. 26:306-309 (1973).

<727>
CHEMICAL NAME: BAS 3502
CHEMICAL COMMON NAME: BAS-3502
PLANT: Beet, sugar (BETA VULGARIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, green (SETARIA VIRIDIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PENSYLVANICUM); Buckwheat, wild (POLYGONUM CONVOLVULUS); Mustard, wild (BRASSICA KABER); Stinkweed (THLASPI ARVENSE)
EXPERIMENTAL DOSE: 3 and 4 lb/A
APPLICATION METHODS: Preemergence and postemergence
EXPERIMENTAL CONDITIONS: 12 treatments per trial, each trial replicated 8 times; 4 row wide plots, 50 ft. long--row 1 was untreated check, row 2 had herbicide plus hand weeding, row 3 received preemergence TCA at 8 lb/A and row 4 was same as row 2 except delayed hand weeding; visual ratings

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EFFECTS: Preemergence--no crop damage at 3 lb/A and very little at 4 lb/A, excellent control of barnyard grass, moderate control of foxtail, pigweed, and lambsquarters, moderate control of other species at 3 lb/A but poor control at 4 lb/A; postemergence (4 lb/A)--no crop damage, excellent control of barnyard grass, foxtail, and lambsquarters, moderate pigweed control, poor control of other species
COMMENTS: Postemergence treatment somewhat more effective than preemergence; 4 lb/A preemergence gave less control than 3 lb/A preemergence
REFERENCE: Klassen, M. and G. Guccione, "Evaluation of Herbicides for Weed Control in Sugarbeets in Manitoba," J. Amer. Soc. Sugar Beet. Technol. 16(7):553-560 (1971).

<728>
CHEMICAL NAME: BAS-3901
CHEMICAL COMMON NAME: BAS-3901
PLANT: Grasses; Broadleaf weeds; Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.75, 1.00, and 1.25 lb/A
APPLICATION METHODS: Preplant incorporated; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 13 locations in Iowa
EFFECTS: Effective control of grasses and moderate control of broadleaf weeds with no adverse effect on soybean
COMMENTS: Dinitroaniline chemicals applied at proper rates for organic matter levels present provided good to excellent grass control; rate probably more critical for organic matter on BAS-3901, CG-10832 and dinitramine than for trifluralin; organic matter exceedingly critical for nitraline; vernolate provided good grass control and at most locations, better broadleaf control than dinitroaniline chemicals; preplant incorporated plus overlay treatment can increase broadleaf and overall weed control and usually result in less phototoxicity to the crop
REFERENCE: Jennings, V.M., D.W. Staniforth, and W.G. Lovely, "Soybean Herbicide Evaluations Across Iowa in 1973," Proc. N. Cent. Weed Contr. Conf. 28:42-45 (1973).

<729>
CHEMICAL NAME: Bay NTN 6867
CHEMICAL COMMON NAME: Bay NTN 6867
PLANT: Potato (SOLANUM TUBEROSUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preemergence, pre-plant incorporated, or postemergence sprays; 30 to 35 lb/sq in at 18 to 43 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Haven loam
EFFECTS: Preplant incorporated--moderate weed control with no adverse effect on potatoes
COMMENTS: Outstanding treatments were CGA 24705 applied preemergence or pre-soil incorporated, maintaining 80% control or better for at least three months; results excellent also with EPTC, alachlor, napropamide, and FMC 25213; several herbicides in combination also effective
REFERENCE: Selleck, G.W. and L.E. Weber, "Herbicide Trials for Yellow Nutsedge in Potatoes on Long Island," Proc. NE Weed Sci. Soc. 30:239-242 (1976).

<730>
CHEMICAL NAME: Bay NTN 6867
CHEMICAL COMMON NAME: Bay NTN 6867
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Crabgrass, hairy (DIGITARIA SANGUINALIS); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 1.0 to 4.0 lb/A
APPLICATION METHODS: Preemergence; postemergence, and preplant incorporated sprays; 18 gal/A at 30 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam
EFFECTS: Postemergence, 4.0 lb/A--moderate to effective weed control with no adverse effect on cabbage
COMMENTS: None of the herbicides used unacceptably phytotoxic, but alachlor resulted in slight temporary stunting; alachlor most effective herbicide on total weed spectrum and HOE 23408 most effective for control of annual grasses
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicide Trial for Direct Seeded Fall Cabbage on Long Island," Proc. NE Weed Sci. Soc. 30:197-199 (1976).

<731>
CHEMICAL NAME: Bay NTN 6867
CHEMICAL COMMON NAME: Bay NTN 6867
PLANT: Purslane, common (PORTULACA OLERACEA); Chickweed, mouse-ear (CERASTIUM VISCOSUM); Galinsoga (GALINSOGA CILIATA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Mustard, wild (BRASSICA KABER); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Pineappleweed (MATRICARIA MATRICARIOIDES); Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preemergence spray; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; 11 onion varieties studied in direct-seeding culture
EFFECTS: Effective weed control with moderate damage to onions
COMMENTS: Best combination of weed control, selectivity, and yield response occurred with standard CDAA treatment at cracking plus 2 applications of nitrofen postemergence; oxadiazon and Bay NTN 6867 effective for at least 8 weeks in controlling weeds; oxadiazon phytotoxic to onions at ground crack stage but selectivity markedly improved with postemergence applications; yield data indicated that Bay NTN 6867 significantly reduced yield in all but one variety
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicide Trials for Direct Seeded Onions on Long Island, 1975," Proc. NE Weed Sci. Soc. 30:181-184 (1976).

<732>
<732>
CHEMICAL NAME: Benechlor 3
CHEMICAL COMMON NAME: Benechlor 3
PLANT: Hyacinth, water (EICHHORNIA HASTAEFOLIA)
EXPERIMENTAL DOSE: 5 to 45 gal/A
APPLICATION METHODS: Addition to water containing test plants
EXPERIMENTAL CONDITIONS: Field study; plants and water contained in washtubs maintained outdoors
EFFECTS: Extensive necrosis at 45 gal/A
COMMENTS: Dwarfing especially noted at low initial doses of santobrite, but specimens treated with low dosages of copper sulphate and beneclor seemed to thrive better than controls; initial dose of santobrite caused yellowing of stalks and withering of leaves; further applications damaged tissues and dwarfed new leaves
REFERENCE: Hirsch, A.A., "Toxic Effects of Sodium Pentachlorphenate and Other Chemicals on Water Hyacinth," Botan. Gaz. 103:620-621 (1942).

<733>
CHEMICAL NAME: Bentazole
CHEMICAL COMMON NAME: Bentazole
PLANT: Onion (ALLIUM CEPA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Postemergence 48 days after treatment
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared April 16 of the following year; seeding 1 day after seedbed preparation; single row plots 3 by 28 ft; herbicides applied in 2 ft band over row; irrigation as needed; weed ratings, 123 days after seeding; onion harvest, more than 5 months after seeding--34 bulbs from untreated control
EFFECTS: Poor pigweed and foxtail control, complete control of lambsquarter; 31 bulbs at 1 lb/A and 46 bulbs at 2 lb/A harvested
COMMENTS: Bentazole in combination with other herbicides also tested
REFERENCE: Noll, C.J., "Evaluation of Herbicides for Weed Control in Seeded Onions Grown in Mineral Soils," Proc. Northeast. Weed Sci. Soc. 28:221-223 (1974).

<734>
CHEMICAL NAME: Benz(j)aceanthrylene, 1,2-dihydro-3-methyl-
CHEMICAL COMMON NAME: Methylcholanthrene
PLANT: Kalanchoe (KALANCHOE DIAGREMONTIANA); (BRYOPHYLLUM CALYCINUM); (NICOTINIA GLAUCA); Sunflower (HELIANTHUS ANNUUS); Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.0 to 3.0% in hydrous lanolin
APPLICATION METHODS: Lanolin applied to decapitated plants or to injured (needle prick) stem soft tissue
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Varied cancerous growths induced in plants with carcinogenic agents or growth substances
COMMENTS: Scharlach red found active in some cases with KALANCHOE DAIGREMONTIANA; application to apical internode after decapitation produced overgrowths which resembled crown galls; other carcinogens like 1,2,5,6-dibenzanthracene,3,4-benzpyrene, methylcholanthrene induced necrosis of treated zone; indoleacetic acid in lanolin on decapitated and injured stems induced root formation; stems cracked and small nodular masses formed; small overgrowths on decapitated kalanchoes present histological pictures identical with crown gall
REFERENCE: Levine, M., "Plant Responses to Carcinogenic Agents and Growth Substances: Their Relation to Crown Gall and Cancer," Bull. Torrey Bot. Club 67:199-226 (1940).

<735>
CHEMICAL NAME: Benz[de]isoquinoline-1,3(2H)-dione, 2-[diethoxyphosphinothioyl)oxy]-1H-
CHEMICAL COMMON NAME: Bayer 39197
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 80% WP formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Growth reduction and foliar damage
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<736>
CHEMICAL NAME: Benzaldehyde, 2-hydroxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 93, 73, 101, and 82% growth at 100, 200, 300, and 400 ppm, respectively
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<737>
CHEMICAL NAME: Benzaldehyde, 2,6-dichloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: 10(-4) M moderately toxic to clover, alfalfa, pigweed, and tomatoes, minor toxicity to ryegrass and mustard; minor or no toxicity to all plants at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<738>
CHEMICAL NAME: Benzaldehyde, 4-hydroxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 74, 66, 62, and 60% growth at 100, 200, 300, and 400 ppm, respectively
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<739>
CHEMICAL NAME: Benzaldoxime, 2,6-dichloro-alpha-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: 10(-4) M moderately toxic to clover, alfalfa, pigweed, and tomatoes, minor toxicity to ryegrass and mustard; minor toxicity to all plants at 10(-5) and 10(-6) M; no phytotoxicity at 10(-7) M
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<740>
CHEMICAL NAME: Benzaldoxime, 2,6-dichloro-beta-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: 10(-4) M extremely phytotoxic to all plants except clover, strongly toxic to clover; 10(-5) M moderately toxic to ryegrass, pigweed, and mustard, minor toxicity to clover, alfalfa, and tomatoes; minor or no phytotoxicity at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<741>
CHEMICAL NAME: Benzaldoximeacetate, 2,6-dichloro-alpha-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: 10(-4) M extremely phytotoxic to all species; 10(-5) M extremely toxic to clover, ryegrass, pigweed, and tomatoes, strongly toxic to alfalfa and mustard; 10(-6) M moderately toxic to ryegrass, minor toxicity to other plants

<741>
<741> CONT.
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<742>
CHEMICAL NAME: Benzaldoximeacetate, 2,6-dichloro-beta-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: 10(-4) and 10(-5) M extremely toxic to all plants; 10(-6) M extremely toxic to ryegrass, moderately toxic to other plants; 10(-7) M moderately toxic to ryegrass, minor toxicity to other plants
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<743>
CHEMICAL NAME: Benzamide
CHEMICAL COMMON NAME: Benzamide
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Slight phytotoxic effect of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<744>
CHEMICAL NAME: Benzamide
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal growth; pot test--no data; Petri dish test--102, 102, and 89% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<745>
CHEMICAL NAME: Benzamide, N-(1-methylethyl)-
CHEMICAL COMMON NAME: Benzamide, N-isobutyl-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Moderate damage of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<746>
CHEMICAL NAME: Benzamide, N-(3-chlorophenyl)-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Moderate control of shoot emergence at 10(-5)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active.
REFERENCE: Harvey, R.G. and C.P. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<747>
CHEMICAL NAME: Benzamide, N-(3,4-dichlorophenyl)-N-[(alpha-methyl)acetic acid]-, methyl ester
CHEMICAL COMMON NAME: Benzoylprop-ethyl
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Timothy (PHLEUM PRATENSE); Speedwell, creeping (VERONICA FILIFORMIS); Fescue (FESTUCA PRATENSIS)
EXPERIMENTAL DOSE: 1.12 and 3.36 kg/ha
APPLICATION METHODS: Postemergence spray; 337 l./ha at 2.07 bars pressure with Tee jets
EXPERIMENTAL CONDITIONS: Field study; applied at 2-3 leaf stage and tillering
EFFECTS: Very slight adverse effect on all grasses at both growth-stage applications at normal rate (4.75 kg/ha)
COMMENTS: All varieties susceptible to isoproturon, except at tillering stage, and to difenzoquat; perennial and Italian ryegrass varieties resistant to all other herbicides; all high-rate applications, and normal rate of difenzoquat, checked timothy
REFERENCE: Oswald, A.K. and R.J. Hagger, "The Tolerance of Ten Grass Varieties to Six Herbicides With a Potential for Wild Oat Control in Herbage Seed Crops," Proc. 12th. Br. Weed Cont. Conf. 2:715-722 (1974).

<748>
CHEMICAL NAME: Benzamide, N-(3,4-dichlorophenyl)-N-[(alpha-methyl)acetic acid]-, methyl ester
CHEMICAL COMMON NAME: Benzoylprop-methyl
PLANT: Oat, wild (AVENA FATUA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays; 20 gal/A at 32 lb/sq in; and broadcast (G)
EXPERIMENTAL CONDITIONS: Field study; 13 sites in Britain; time period--1970-1972
EFFECTS: Moderate control of A. FATUA with no adverse effect on wheat; late-postemergence treatment more effective than early- or mid-treatments
COMMENTS: Best control obtained from pre-emergence tri-allate granules and chlortoluron, and late post-emergence benzoylprop-ethyl; all treatments tended to perform less well at highest weed populations; good yield responses obtained
REFERENCE: Proctor, J.M. and D.B. Livingston, "Chemical Control of AVENA FATUA in Winter Wheat," Proc. 11th. Br. Weed Cont. Conf. 11(1):288-293 (1972).

<749>
CHEMICAL NAME: Benzamide, N-(3,4-dichlorophenyl)-N-[(alpha-methyl)acetic acid]-, methyl ester
CHEMICAL COMMON NAME: Benzoylprop-ethyl
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Foliar spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1973 and 1974
EFFECTS: Slightly reduced seed yield but no adverse effect on seed germination
COMMENTS: Ethofumesate and methabenzthiazuron applied to three replicates of perennial ryegrass at tillering stage of sowing year to simulate application for control of grass weeds, did not significantly affect yield or seed germination immediately after harvest
REFERENCE: Evans, A.W. and D.A. Muncey, "Observations on the Effect of Three Herbicides with Promise in the Control of Graminaceous Weeds on the Seed Production of Ryegrass," Proc. 12th Br. Weed Cont. Conf. 2:723-726 (1974).

<750>
CHEMICAL NAME: Benzamide, N-(3,4-dichlorophenyl)-N-[(dimethylamino)carbonyl]-4-methoxy-
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Meadowgrass, rough stalked (POA TRIVIALIS); Timothy (PHLEUM PRATENSE); Fescue, tall (FESTUCA ARUNDINACEA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Ryegrass, perennial (LOLIUM PERENNE); Fescue, meadow (FESTUCA ELATIOR); Cocksfoot
EXPERIMENTAL DOSE: 24 and 48 oz/A
APPLICATION METHODS: Preemergence and postemergence spray
EXPERIMENTAL CONDITIONS: Clay or heavy clay soils; 1966-67 and 1967-78 main trials, wet weather hampered 1966-67 trial thus study emphasis on 1967-68 trial; spraying dates of 8/22/67, 9/22/67, 1/4/68, 3/4/68, and 3/5/68; 2 to 3 replicates; average for all crop grasses reported
EFFECTS: Excellent crop tolerance at 35 wk; excellent preemergence control at 48 oz/A of A. MYOSUROIDES, moderate preemergence control at 24 oz/A but no control when well tillered; moderate control of P. TRIVIALIS when well tillered at 48 oz/A
COMMENTS: Crop grasses sown 7/5/67, weed grasses sown 8/21/67, 9/18/67, and 2/29/68
REFERENCE: Shildrick, J.P. and T.J. Arthur, "Control of ALOPECURUS MYOSUROIDES (Blackgrass) and POA TRIVIALIS (Routh-stalked Meadow Grass) in Grass Seed Crops by Herbicides," Nat. Inst. Agric. Bot. (Cambridge) Rep. Acc. 11(2):361-369 (1968).

<751>
<751>
CHEMICAL NAME: Benzamide, N-(4-chlorophenyl)-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal growth; pot test--no data; Petri dish test--95, 91, and 78% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<752>
CHEMICAL NAME: Benzamide, N-methyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal growth; pot test--no data; Petri dish test--102, 102, and 89% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<753>
CHEMICAL NAME: Benzamide, N-methyl-N-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--slightly abnormal wheat and ryegrass growth, abnormal cabbage growth; pot test--no data; Petri dish test--92, 103, and 63% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<754>
CHEMICAL NAME: Benzamide, N-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal growth; pot test--no data; Petri dish test--94, 91, and 90% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<755>
CHEMICAL NAME: Benzamide, N,N-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured

<755> CONT.
EFFECTS: Box test--no data; pot test--abnormal cabbage growth, slightly abnormal wheat growth; Petri dish test--95, 105, and 81% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<756>
CHEMICAL NAME: Benzamide, 2-bromo-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--slightly abnormal wheat growth at 10 lb/A and abnormal wheat growth at 30 lb/A, abnormal cabbage growth at 10 lb/A and no growth at 30 lb/A; Petri dish test--97, 106, and 63% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<757>
CHEMICAL NAME: Benzamide, 2-chloro-
PLANT: Linseed (LINUM USITATISSIMUM); Cabbage (BRASSICA OLERACEA); Turnip (BRASSICA RAPA); Beet, sugar (BETA VULGARIS); Onion (ALLIUM CEPA); Carrot (DAUCUS CAROTA); Lucerne (MEDICAGO SATIVA); Corn (ZEA MAYS); Wheat (TRITICUM AESTIVUM); Oat (AVENA SATIVA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Oat, wild (AVENA FATUA); Blackgrass (JUNCUS GERARDI); Chickweed, common (STELLARIA MEDIA); Poppy (PAPAVER sp.)
EXPERIMENTAL DOSE: 2 and 6 lb/A
APPLICATION METHODS: Preemergent spray
EXPERIMENTAL CONDITIONS: Plants harvested 3-5 weeks after spraying; results expressed as percent of fresh weight of controls; greenhouse study
EFFECTS: 2 lb/A--0-12% chickweed yield, 38-62% poppy, carrot, and blackgrass yield, 63-87% ryegrass, wheat, lucerne, onion and cabbage yield, 88-100% yield of others; 6 lb/A--0-12% poppy, chickweed, blackgrass, ryegrass, and lucerne yield, 13-37% beet, turnip, and cabbage yield, 63-87% wheat yield, and 88-100% yield of others
COMMENTS: Suggestion that compound warrents field testing made by researchers
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<758>
CHEMICAL NAME: Benzamide, 2-chloro-N-(1-methylethyl)-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data, pot test--normal wheat growth, abnormal cabbage growth; Petri dish test--no data
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<759>
CHEMICAL NAME: Benzamide, 2-chloro-N-ethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data, pot test--normal wheat growth, abnormal cabbage growth; Petri dish test--no data
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<760>
<760>
CHEMICAL NAME: Benzamide, 2-chloro-N-methyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 10 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--abnormal cabbage growth, normal wheat and ryegrass growth; pot test--normal wheat growth, abnormal cabbage growth; Petri dish test--111, 84, and 62% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<761>
CHEMICAL NAME: Benzamide, 2-chloro-N-propyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data, pot test--normal wheat growth, abnormal cabbage growth; Petri dish test--no data
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<762>
CHEMICAL NAME: Benzamide, 2-chloro-N,N-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal wheat and ryegrass growth at 10 and 30 lb/A, slightly abnormal cabbage growth at 10 lb/A and abnormal cabbage growth at 30 lb/A; pot test--no data; Petri dish test--88, 82, and 51% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<763>
CHEMICAL NAME: Benzamide, 2-fluoro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 3, 10, and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--normal wheat growth at 3 lb/A, abnormal wheat growth at 10 lb/A and no growth at 30 lb/A, abnormal cabbage growth at 3 lb/A and no growth at 10 and 30 lb/A; Petri dish test--87, 90, and 17% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<764>
CHEMICAL NAME: Benzamide, 2-hydroxy-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured

<764> CONT.
EFFECTS: Box test--no data; pot test--normal wheat growth slightly abnormal cabbage growth; Petri dish test--105, 110, and 44% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<765>
CHEMICAL NAME: Benzamide, 2-iodo-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--normal wheat growth, abnormal cabbage growth; Petri dish test--102, 104, and 94% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<766>
CHEMICAL NAME: Benzamide, 2-methoxy-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--slightly abnormal wheat growth, abnormal cabbage growth; Petri dish test--114, 92, and 87% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<767>
CHEMICAL NAME: Benzamide, 2-methyl-
PLANT: Linseed (LINUM USITATISSIMUM); Cabbage (BRASSICA OLERACEA); Turnip (BRASSICA RAPA); Beet, sugar (BETA VULGARIS); Onion (ALLIUM CEPA); Carrot (DAUCUS CAROTA); Lucerne (MEDICAGO SATIVA); Corn (ZEA MAYS); Wheat (TRITICUM AESTIVUM); Oat (AVENA SATIVA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Oat, wild (AVENA FATUA); Blackgrass (JUNCUS GERARDI); Chickweed, common (STELLARIA MEDIA); Poppy (PAPAVER sp.)
EXPERIMENTAL DOSE: 2 and 6 lb/A
APPLICATION METHODS: Preemergent spray
EXPERIMENTAL CONDITIONS: Plants harvested 3-5 weeks after spraying; results expressed as percent of fresh weight of controls; greenhouse study
EFFECTS: 2 lb/A--13-17% yield of poppy, 38-62% chickweed and carrot yield, 63-87% ryegrass, corn, and lucerne yield, 88-100% yield of others; 6 lb/A--0-12% poppy and lucerne yield, 13-37% chickweed, ryegrass, carrot, and linseed yield, 38-62% cabbage yield, 63-87% wild oat, wheat, and beet yield, 88-100% yield of others
COMMENTS: Suggestion that compound warrents field testing made by researchers
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<768>
CHEMICAL NAME: Benzamide, 2,3-dimethoxy-
CHEMICAL COMMON NAME: o-veratramide
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Severe damage to peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<769>
<769>
CHEMICAL NAME: Benzamide, 2,4-dichloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm, respectively
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--normal wheat growth, slightly abnormal cabbage growth; Petri dish test--100, 94, and 73% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<770>
CHEMICAL NAME: Benzamide, 2,4,6-trichloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--normal wheat growth, abnormal cabbage growth; Petri dish test--100, 94, and 94% wheat root growth at 1, 10, and 100 ppm
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<771>
CHEMICAL NAME: Benzamide, 2,6-dichloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: 10(-4) M extremely toxic to clover, pigweed, and tomatoes, moderately toxic to mustard and alfalfa, minor toxicity to ryegrass; minor or no phytotoxicity at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<772>
CHEMICAL NAME: Benzamide, 2,6-dichloro-N-[[(3,4-dichlorophenyl)amino]carbonyl]-
CHEMICAL COMMON NAME: DU-19111
PLANT: Bean, kidney (PHASEOLUS VULGARIS); Beet, sugar (BETA VULGARIS); Oat (AVENA SATIVA); Plants
EXPERIMENTAL DOSE: 1% acetone solution; 10 kg/ha
APPLICATION METHODS: Postemergence and preemergence sprays
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No adverse effect on test plants or seed germination when sprayed on soil
COMMENTS: DU 19111 chemically related to herbicides dichlobenil and diuron; no phytotoxic effects noticed; leaves of bean, tomato, sugar beet, oats and large variety of weeds remained unaffected when sprayed with a 1% acetonic solution; germination of seeds not inhibited after pre-emergence application
REFERENCE: van Daalen, J.J., J. Meltzer, R. Mulder, and K. Wellinga, "A Selective Insecticide with a Novel Mode of Action," Naturwissensch. 59:312-313 (1972).

<773>
CHEMICAL NAME: Benzamide, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben, amide
PLANT: Cucumber (CUCUMIS SATIVUS); Muskmelon (CUCUMIS MELO); Watermelon (CITRULLUS VULGARIS); Squash, winter (CUCURBITA MOSCHATA); Squash, winter (CUCURBITA PEPO); Squash, winter (CUCURBITA MAXIMA)
EXPERIMENTAL DOSE: 3.36 and 10.08 kg/ha
APPLICATION METHODS: Preplant spray; soil incorporation; water soluble (2.0 lb/gal water); G and glomule formulations used in studies not summarized here; a total of 5 different experiments are reported
EXPERIMENTAL CONDITIONS: Greenhouse study; flat culture; evaluation time--15 days
EFFECTS: No effect on butternut and Boston Marrow squashes; slight growth reduction of muskmelon and Table Queen squash; significant growth reduction of cucumber and watermelon
COMMENTS: Little differences among analogs except amide generally nontoxic to all test crops and weeds; great

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differences in growth noted among species; when chloramben incorporated in soil, cucumber and watermelon very susceptible to all analogs except amide; muskmelon was tolerant of all analogs; squashes exhibited variable susceptibility
REFERENCE: Ivany, J.A. and R.D. Sweet, "Response of Cucurbits to Certain Analogs of Chloramben," Weed Sci. 19(5):491-495 (1971).

<774>
CHEMICAL NAME: Benzamide, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Amchem 65-78
PLANT: Strawberry (FRAGARIA sp.); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Dandelion (TARAXACUM OFFICINALE); Lamb's-quarters (CHENOPODIUM ALBUM); Chickweed, common (STELLARIA MEDIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Sorrell, sheep (RUMEX ACETOSELLA)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Postemergence spray at 35 psi in 60 gpa water; 80% WP formulation
EXPERIMENTAL CONDITIONS: Randomized block design with 4 replicates; weed control evaluated on 1.5-ft strip running the length of the plot; 15-22 ft plot lengths; sandy loam soil; 4 experiments, 2 years
EFFECTS: No consistent effects on rooting; good broadleaf weed control; poor grass weed control
COMMENTS: Purslane; only weed for which data tabulated singly, other weeds grouped as broadleaf and grass
REFERENCE: Ricketson, C.L., "Effect on Herbicides on Rooting of Strawberry Runner Plants," Hortic. Res. Inst. Ont. Annu. Rep. :10-18(1966).

<775>
CHEMICAL NAME: Benzamide, 3-chloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--normal wheat and abnormal cabbage growth at 10 and 30 lb/A; Petri dish test--100, 110, and 50% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<776>
CHEMICAL NAME: Benzamide, 3-chloro-N-methyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--wheat and cabbage growth normal at 10 lb/A and abnormal at 30 lb/A, ryegrass growth normal at 10 and 30 lb/A; pot test--no cabbage growth, abnormal wheat growth; Petri dish test--99, 88, and 27% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

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CHEMICAL NAME: Benzamide, 3-chloro-N,N-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal wheat and ryegrass growth at 10 and 30 lb/A, abnormal cabbage growth; pot test--normal wheat growth at 10 lb/A but abnormal at 30 lb/A, abnormal cabbage growth at 10 lb/A and no growth at 30 lb/A; Petri dish test--93, 98, and 70% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

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<778>
CHEMICAL NAME: Benzamide, 3-nitro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--abnormal growth, more pronounced at 30 lb/A; Petri dish test--87, 85, and 37% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

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CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-
CHEMICAL COMMON NAME: RH-315
PLANT: Purslane, common (PORTULACA OLERACEA); Lamb's-quarters (CHENOPODIUM ALBUM); Horseweed (ERIGERON CANADENSIS); Carnation; Dwarf mallow (MALVA ROTUNDIFOLIA); Bluegrass, annual (POA ANNUA); Buttercup, Bermuda (OXALIS CERNUA); Pigweed, prostrate (AMARANTHUS BLITOIDES)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: Spray application to ground bed; incorporation to about one-half in. depth by raking
EXPERIMENTAL CONDITIONS: Field study; soil--Sorrento fine sandy loam with one in cedar shavings mixed to 4-6 in. depth by rototilling; plants set seven days after herbicide application; evaluation--3, 8, and 12 wks (weed conents and crop phytotoxicity) and 6, 7, and 8 mos (crop yield)
EFFECTS: Moderate to effective weed control at both rates of application but reduced carnation harvest and phytoxicity observed
COMMENTS: Four herbicides evaluated; propachlor appeared to be promising preemergence and preplant herbicide for control of wide variety of weeds in carnation culture; miscellaneous additional weeds also effectively controlled at herbicide rates cited above
REFERENCE: Bivins, J.L., C. Elmore, and A. Lange, "Chemical Weed Control in Carnation Transplants," Calif. Agric. 26(8):14-15 (1972).

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CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-
CHEMICAL COMMON NAME: RH-315
PLANT: Plants; Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Posttransplant (same day)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--aprox. 3 mos
EFFECTS: Effective weed control with no adverse effect on chrysanthemum yield at either rate
COMMENTS: Excellent weed control obtained with number of herbicides; only R-7465 and diphenamid used as soil surface treatments and bensulide gave unsatisfacotry control; various herbicide treatments found to affect growth of chrysanthemum plants to different degrees
REFERENCE: Welker, W.V. and J.C. Cialone, "An Evaluation of Herbicides for the Control of Weeds in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 26:51-54 (1972).

<781>
CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-
CHEMICAL COMMON NAME: Kerb
PLANT: Paragrass (PANICUM PURPURASCENS)
EXPERIMENTAL DOSE: 5.0 lb/A; 75% WP
APPLICATION METHODS: Postemergence spray; 25 gal/A; up to three repeat applications
EXPERIMENTAL CONDITIONS: Field study; soil--Humatas clay loam; evaluation time--up to 20 wk; clipped or non-clipped paragrass plots treated; combined applications
EFFECTS: Apical leaf curling only
COMMENTS: Spray applied to regrowth generally gave better control for longer periods; best control obtained with dalapon + TCA applied twice; low rate initially and one-half rate at repeat application fully as effective as higher rate tested; dalapon alone nearly as effective as dalapon + TCA combination on both older growth and regrowth
REFERENCE: Whitney, A. S., A. V. Ramos, and A. S. Rios, "Chemical Control of Paragrass (BRACHIARIA MUTICA) in a Humid Upland Area," J. Agr. Univ. P. R. 57(2):129-135 (1973).

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CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-
CHEMICAL COMMON NAME: Propyzamide
PLANT: Plants; Lotus (LOTUS PEDUNCULATUS)
EXPERIMENTAL DOSE: 0.8, 1.4, and 2.2 kg/ha
APPLICATION METHODS: Preemergence spray; 560 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Tokomaur silt loam, time period--1974 and 1975
EFFECTS: At 2.2 kg/ha, moderate weed control with growth reduction and yield reduction
COMMENTS: Dinoseb most effective of 6 pre-emergence herbicides tested and 2,4-DB best of 5 postemergence herbicides; crop showed no tolerance towards atrazine, cyanazine, metribuzin, or bentazone
REFERENCE: Ivens, G.W., "Preliminary Evaluation of Pre- and Post-Emergence Herbicides in "Maku" Lotus," Proc. 28th. New Zealand Weed and Pest Cont. Conf. 28:31-34 (1975).

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CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-
CHEMICAL COMMON NAME: Propyzamide
PLANT: Rapeseed (BRASSICA CAMPESTRIS); Chamomile, wild (MATRICARIA sp.); Chickweed, common (STELLARIA MEDIA); Cleavers (GALIUM APARINE)
EXPERIMENTAL DOSE: 350 and 700 g/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; time period--1974 to 1976; 76 trials in UK, France, and Sweden
EFFECTS: Effective weed control at 700 g/ha rate except MATRICARIA (no effect) with no adverse effect on rapeseed
COMMENTS: Under range of climatic and cultural conditions, combinations of two herbicides, benazolin esater, and 3,6 dichloropicolinic acid provided extremely effective broad-leaved weed control whilst maintaining good margin of crop safety
REFERENCE: Rea, B.L., R.A. Palmer, and A. de St. Blanquat, "Weed Control in Rapeseed With Benazolin Ester/3,6 Dichloropicolinic Acid Mixtures," Proc. 1976 Br. Crop Protection Conf. 2:517-624 (1976).

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CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-
CHEMICAL COMMON NAME: Propyzamide
PLANT: Chicory (CICHORIUM sp.); Mayweed (ANTHEMIS COTULA); Lamb's-quarters (CHENOPODIUM ALBUM); Grasses; Deadnettle (LAMIUM sp.); Knotweed (POLYGONUM AVICULARE); Speedwell (VERONICA sp.); Chickweed, common (STELLARIA MEDIA); Chamomile, wild (MATRICARIA sp.); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Ragwort, common (SENECIO VULGARIS)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: 20 gpa spray at 32 psi, postemergence
EXPERIMENTAL CONDITIONS: Field studies; 4 years study, 1971-1974; ramdomized block design with 3 replications; 6 X 30 ft plot size; 6 test sites
EFFECTS: Chicory population approximately same or greater than control; S. VULGARIS, A. COTULA, C. ALBUM, OR MATRICARIA sp. not controlled
COMMENTS: Insufficient weed growth prevented judgements on herbicide control on all but S. VULGARIS, A. COTULA, C. ALBUM, and MATRICARIA sp.
REFERENCE: Baldwin, J.H. and W.A. Armsby, "Herbicides For Use in Chicory," Proc. Brit. Weed Control Conf. 12(1):435-438(1974).

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CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethylpropynyl)-
CHEMICAL COMMON NAME: Pronamide
PLANT: Quackgrass (AGROPYRON REPENS); Hydrangea (HYDRANGEA sp.); Euonymous, sarcoxie (EUONYMUS RADICANS); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Pine, white (PINUS STROBUS); Juniper, andorra (JUNIPERUS HORIZONTALIS); Yew, spreading (TAXUS CUSPIDATA); Cinquefoil (POTENTILLA sp.); Cinquefoil (POTENTILLA sp.); Horseweed (ERIGERON CANADENSIS); Dandelion, common (TARAXACUM OFFICINALE); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Nightshade, black (SOLANUM NIGRUM) ; Galinsoga, hairy (GALINSOGA CILIATA); Nettle, stinging (URTICA DIOICA); Sorrell, wood (OXALIS STRICTA); Yellow rocket (BARBAREA VULGARIS); Purslane, common (PORTULACA OLERACEA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 1, 1.5, 2, 3, and 4 lb/A
APPLICATION METHODS: Formulation -- 50% WP; sprays applied with knapsack sprayer calibrated to delivery 50 gal/A; preplanting application
EXPERIMENTAL CONDITIONS: First test -- sandy loam soil; 6x10 ft plots; hydrangea, sarcoxie euonymus, and chrysanthemum planted at 1, 7, and 14 days after treatment; second test -- silt loam soil; 10x12 ft plots; quackgrass 6 to 12 in. tall in fall and 6 to 10 in. tall in spring; air temperature at herbicide application, 58 degrees F fall and 63 degrees F spring; soil temperature at 3 in., 45 degrees F and 53 degrees F fall and spring, respectively
EFFECTS: First test -- 2 or 4 lb/A controlled quackgrass but gave poor control of cinquefoils, horseweed, dandelion, and common ragweed; controlled fall growth of Shepherd's purse and reduced stands of crabgrass; 4 lb/A reduced vigor of hydrangea; second test -- November applications followed by spring plowing gave poor quackgrass and other weed control; no significant effect on white pine, yew, juniper or evonymus
COMMENTS: Author reports difficulty in understanding why pronamide did not control quackgrass of second test; suggest difference in ground preparation techniques -- ground rototilled at first test site and plowed at second test site
REFERENCE: Ahrens, J.F., "Preplant Herbicides for Control of Quackgrass in Ornamentals," Proc. Northeast. Weed Sci. Soc. 28:372-378(1974).

<786>
CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethylpropynyl)-
CHEMICAL COMMON NAME: Pronamide
PLANT: Quackgrass (AGROPYRON REPENS); Nutsedge, yellow (CYPERUS ESCULENTUS); Lamb's-quarters (CHENOPODIUM ALBUM); Yew, upright (TAXUS CUSPIDATA); Chickweed, common (STELLARIA MEDIA); Horseweed (ERIGERON CANADENSIS); Vetch, bird (VICIA CRACCA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Carpetweed (MOLLUGO VERTICILLATA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 1,2, and 4 lb/A
APPLICATION METHODS: Formulation -- 50% WP and G; granules applied with auger-feed machine calibrated for each treatment; sprays applied with hand-held boom to deliver 50 gal/A
EXPERIMENTAL CONDITIONS: Yews (5 years old) spaced at 2 foot intervals in rows 3 feet apart; herbicides applied on December 1, 1970 and again on December 9, 1971; soil was moist and 39 degrees F at 3 inch depth at 1970 treatment, air temperature was 45 degrees F; December 1971 application-- 1 to 3 inches snow on ground and air temperature 39 degrees F.
EFFECTS: Quackgrass -- 1 or 2 lb/A exhibited diminishing control through season, two applications of 4 lb/A gave almost complete control, granules and powder showed equal control; nutsedge -- no measurable control; annual weeds -- 2 or 4 lb/A gave fair control of winter annual weeds (horseweed and chickweed)

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but no control of annual weeds in June or later; no appreciable injury to yews
COMMENTS: Excessive rainfall second growing season accelerated herbicide leaching; results of weed control with combinations of herbicides reported
REFERENCE: Ahrens, J.F., "Fall Applications of Herbicides for Control of Quackgrass and Yellow Nutsedge in TAXUS CUSPIDATA CAPITATA," Proc. Northeast. Weed Sci. Soc. 28:379-385(1974).

<787>
CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethylpropynyl)-
CHEMICAL COMMON NAME: Pronamide
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at all rates evaluated
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, B.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<788>
CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethylpropynyl)-
CHEMICAL COMMON NAME: Pronamide
PLANT: Bluegrass, annual (POA ANNUA); Parsley-piert (ALCHEMILLA MICROCORPA); Speedwell, corn (VERONICA ARVENSIS); Clover, hop (TRIFOLIUM AGARIUM); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 0.8 kg/ha
APPLICATION METHODS: Preemergence spray; broadcast application in 376 l./ha water
EXPERIMENTAL CONDITIONS: 2-year test on golf course; Cecil loam and Cecil sandy loam; bermudagrass turf; winter experiments; terbutol, DCPA, and pronamide as chemical checks; visual ratings
EFFECTS: Bluegrass control--2 years, 93 and 100%; parsley-piert control--2 years, 0 and 40%; corn speedwell control--2 years, 96 and 100%; hop clover control--2 years, 43 and 53%; bermudagrass--no significant effect
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<789>
CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethylpropynyl)-
CHEMICAL COMMON NAME: Pronamide
PLANT: Bermudagrass, common (CYNODON DACTYLON); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.75 lb/A
APPLICATION METHODS: Preemergence broadcast treatment in 40 gpa
EXPERIMENTAL CONDITIONS: 3-year experiment; Cecil sandy loam; application in July, August, September, and October of all 3 years (1971-1973); 5 X 10 ft plots, split-plot design--dates of treatment as main plots, herbicide treatments as subplots with 4 replications; ratings made year following treatment
EFFECTS: No crabgrass control
COMMENTS: Simazine and pronamide, least crabgrass control of herbicides tested; no mention of bermudagrass toxicity
REFERENCE: Johnson, B.J., "Crabgrass Control in Common Bermudagrass Turf from Herbicides Applied the Previous Year," Ga. Agric. Res. 17(2):17-18 (1975).

<790>
CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethylpropynyl)-
CHEMICAL COMMON NAME: Pronamide
PLANT: Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Preemergence treatment in spray volume of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: 80% weed control 25 days after treatment
COMMENTS: Hophornbeam copperleaf--southwestern weed prevalent in peanuts
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<791>
CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethylpropynyl)-
CHEMICAL COMMON NAME: Pronamide
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 0.8, 1.1 and 1.7 kg/ha
APPLICATION METHODS: Preemergence treatments--0.8 and 1.1 kg/ha in April and 1.1 kg/ha in September; postemergence 1.7 kg/ha in September
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: No excessive legume injury; weeds not controlled
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<792>
CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethylpropynyl)-
CHEMICAL COMMON NAME: Pronamide
PLANT: Grasses; Broadleaf weeds; Purslane, common (PORTULACA OLERACEA); Crabgrass (DIGITARIA sp.); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Groundsel, common (SENECIO VULGARIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Azalea (RHODENDRON OBTUSUM); Andromeda (PIERIS JAPONICA); Maple, amur (ACER GINNALA); Maple, Japanese (ACER PALMATUM); Juniper (JUNIPERUS CHINENSIS); Holly (ILEX CRENATA); Privet, California (LIGUSTRUM OVALIFOLIUM); Firethorn (PYRACANTHA COCCINEA); Yew (TAXUS INTERMEDIA); Hemlock, Canadian (TSUGA CANADENSIS); Pine, Japanese black (PINUS THUNBERGII); Honeysuckle, gold flame (LONICERA HECKROTTI); Dogwood, flowering (CORNUS FLORIDA); Goldenbells (FORSYTHIA INTERMEDIA); Hydrangea (HYDRANGEA PANICULATA)
EXPERIMENTAL DOSE: 4.0 lb/A; 50% WP
APPLICATION METHODS: Postemergence spray, TeeJet nozzle; shaker broadcast for granular
EXPERIMENTAL CONDITIONS: Field study; nursery liners
EFFECTS: Moderate control generally of all weeds with slight-moderate damage to ornamentals
COMMENTS: Alachlor and alachlor plus simazine combinations gave nearly complete weed control without injury to test plants; combinations of other herbicides with simazine also effective; Velsicol 5052 very effective against all plants, including nursery plants
REFERENCE: Bing, A., "1976 Preemergence Weed Control in Nursery Liners," Proc. Northeast Weed Sci. Soc. 31:320-325 (1977).

<793>
CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethylpropynyl)-
CHEMICAL COMMON NAME: Pronamide
PLANT: Lettuce (LACTUCA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Turnip, wild (BRASSICA CAMPESTRIS)
EXPERIMENTAL DOSE: 1.5, 3.0, and 6.0 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; soils--Chehalis silty loam, Newberg sand, and Semiahmoo muck
EFFECTS: No adverse effect on lettuce yield with moderate to effective control of barnyard grass and pigweed and slight control of wild turnip
COMMENTS: Lettuce showed considerable tolerance to pronamide with a safety factor greater than 2 x compared to susceptible weeds; crop and weed tolerance greater in a silty loam and a muck soil than in a sandy soil
REFERENCE: Mitidieri, A. and G. Crabtree, "Effect of Pronamide on Lettuce Growth and Weeds as Affected by Soil type, "Hort. Sci. 8(3):224-225 (1973).

<794>
CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethylpropynyl)-
CHEMICAL COMMON NAME: Pronamide
PLANT: Quackgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 0.8 and 1.7 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Root and rhizome samples free-hand sectioned and stained in Toluidine Blue O or fixed for paraffin embedding; external and internal morphology observed
EFFECTS: Rhizome apices--cell enlargement, some necrosis, and increase in nuclear volume; rhizome vascular tissues--abnormal metaxylem vessel elements, necrotic phloem; roots--precocious differentiation and maturation of tissues, eventual vacuolation of apical meristem; root meristem cell nuclei--much enlarged, contained several nucleoli
REFERENCE: Peterson, R.L. and L.W. Smith, "Effects of N-(1,1-Dimethylpropynyl)-3,5-Dichlorobenzamide on the Anatomy of AGROPYRON REPENS (L.) Beauv.," Weed Res. 11(2-3):84-87 (1971).

<795>
CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethylpropynyl)-
CHEMICAL COMMON NAME: Pronamide
PLANT: Sesame (SESAMUM INDICUM); Pigweed (AMARANTHUS sp.); Barley (HORDEUM VULGARE); Millet, Japanese (ECHINOCHLOA FRUMENTACEA)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley, mustard, and Japanese millet planted as weed crop
EFFECTS: Good pigweed, millet, and barley control but severe sesame injury
COMMENTS: Nominal mustard stand even in untreated plots
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<796>
CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethylpropynyl)-
CHEMICAL COMMON NAME: Pronamide
PLANT: Strawberry (FRAGARIA sp.); Grasses
EXPERIMENTAL DOSE: 0.25 to 1.50 lb/A
APPLICATION METHODS: Foliar spray; varied rates and combinations
EXPERIMENTAL CONDITIONS: Field study; time period--1969 to 1972
EFFECTS: At 1.5 lb/A, moderate control of weeds and strawberry yield reduction
COMMENTS: Terbacil applied in February gave excellent control of perennial grasses in strawberries; terbacil in August caused no reduction in crop yield but did not give good control of grasses; pronamide in October gave moderate control of grass weeds but caused reduction in crop yield
REFERENCE: Rath, N. and T.F. O'Callaghan, "Further Experiments With Herbicides for the Control of Perennial Grass Weeds in Strawberries," Proc. 11th. Br. Weed Cont. Conf. 11(1):398-405 (1972).

<797>
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CHEMICAL NAME: Benzamide, 3,5-dichloro-N-(1,1-dimethylpropynyl)-
CHEMICAL COMMON NAME: Pronamide
PLANT: Centipede grass (EREMOCHLOA OPHIUROIDES); Bermudagrass, Tifton (CYNODON sp.); Bermudagrass (CYNODON sp.); Zoysiagrass (ZOYSIA JAPONICAA); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 0.8 kg/ha
APPLICATION METHODS: Preemergence spray; 376 l./ha except benefin which was mixed with sand and applied by hand
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy clay loam; turfgrass sprig-planted; herbicides applied 2 to 3 days after planting; time period--1972 to 1974; evaluation time--16.5 mo
EFFECTS: Slight effect on turfgrass with slight control of grass weeds and moderate control of broadleafs
COMMENTS: Bensulide only herbicide that satisfactorily controlled grassy weeds during first growing season both years; turfgrass generally grew as well or better in untreated than treated plots
REFERENCE: Johnson, B.J., "Minimal Herbicide Treatments on the Establishment of Four Turfgrasses,," Agron. J. 67(1):786-789 (1975).

<798>
CHEMICAL NAME: Benzamide, 4-chloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--abnormal wheat and cabbage growth; Petri dish test--93, 98, and 70% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<799>
CHEMICAL NAME: Benzamide, 4-chloro-N-(4-chlorophenyl)-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal plant growth; pot test--no data; Petri dish test--91, 98, and 88% wheat growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<800>
CHEMICAL NAME: Benzamide, 4-chloro-N-methyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 30 and 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal wheat and ryegrass growth at 30 lb/A but abnormal cabbage growth, all plants abnormal at 50 lb/A; pot test--no data; Petri dish test--98, 97, and 81% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<801>
CHEMICAL NAME: Benzamide, 4-chloro-N-methyl-N-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days

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after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--normal wheat growth, slightly abnormal cabbage growth; Petri dish test--no data
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<802>
CHEMICAL NAME: Benzamide, 4-chloro-N-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 50 lb/A
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal wheat and cabbage growth but slightly abnormal ryegrass growth; pot test--no data; Petri dish test--no data
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<803>
CHEMICAL NAME: Benzamide, 4-chloro-N,N-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 50 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal wheat but abnormal cabbage and ryegrass growth; pot test--no data; Petri dish test--90, 97, and 74% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<804>
CHEMICAL NAME: Benzamine, 4-methyl-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Dipropalin
PLANT: Bluegrass, annual (POA ANNUA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 4.0 and 6.0 lb/A; 2% G and EC
APPLICATION METHODS: Preplant solution soak
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Puyallup fine sandy loam; pH--5.8; temperature--approx 60 F
EFFECTS: Moderate control of bluegrass with no adverse effect on bentgrass
COMMENTS: Dacthal, betasan, dipropalin, trifluralin, and enide significantly controlled annual bluegrass for periods of 9 to 12 weeks; dacthal and betasan completely nonphytotoxic to mature turf
REFERENCE: Goss, R.L., "Preemergence Control of Annual Bluegrass (POA ANNUA L.)," J. Agron. 56(1):479-481 (1964).

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CHEMICAL NAME: Benzamine, 4-methyl-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Dipropalin
PLANT: Bluegrass, annual (POA ANNUA); Bluegrass, Kentucky (POA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Fescue, creeping red (FESTUCA RUBRA); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 8.0 lb/A
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study--emergence of seedlings (germination) studied in flat culture; evaluation time--seed planted up to 93 days after herbicide application
EFFECTS: Reduced germination of all species
COMMENTS: With few exceptions, herbicides retarded stand and vigor of turfgrasses seeded in turf killed with methyl bromide; chlordane was least and commercial arsenic complex plus 7% N most toxic to young seedlings; seedlings of Merion Kentucky bluegrass most resistent to herbicide injury; no appreciable decrease in original turf density noted except for arsenic complex material which severely injured bluegrass turf
REFERENCE: Juska, F.V. and A.A. Hanson, "Effect of Preemergence Crabgrass Herbicides on Seedling Emergence of Turfgrass Species," Weeds 12(2):97-101 (1964).

<806>
<806>
CHEMICAL NAME: Benzenacetic acid
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 25, 50, 75, 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm; radicle length measured, results expressed as percent of control
EFFECTS: 55, 23, and 14% growth at 25, 50, and 75 ppm, respectively; no growth at higher concentrations
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<807>
CHEMICAL NAME: Benzenacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chloropropylate
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Growth retardation and foliar injury (chlorosis and necrosis)
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<808>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA 10832
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 0.75, 1.00, and 1.50 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Poor control of galinsoga in preplanting application; in combination with trifluralin excellent weed control and no effect on beans with preemergence application; in combination with fluorodifen, improved weed control
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<809>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Profluralin
PLANT: Panicum, fall (PANICUM DICHOTOMIFLORUM); Grasses; Broadleaf weeds; Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth)
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam; time period--1975 and 1976
EFFECTS: Effective control of all weeds at both rates with no adverse effect on alfalfa yield
COMMENTS: Dinoseb, metolachlor, and methazole significantly thinned out alfalfa seedings; benefin, EPTC, profluralin, and butralin were outstanding treatments in grassy weed control; Vel 5052 did good job in controlling fall panicum and other grassy weeds but poor in broadleaf weed control
REFERENCE: Vengris, J. "Annual Weed Control in Alfalfa New Seedlings," Proc. Northeast. Weed Sci. Soc. 31:99-103 (1977).

<810>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA 10832
PLANT: Broadleaf weeds; Grasses; Nutsedge, yellow (CYPERUS ESCULENTUS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplant incorporated by drag-off; 38 gal/A at 20 psi; 4% EC Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of grass weeds, moderate control of broadleafs, no control of nutsedge and no adverse effect on potato yield
COMMENTS: Incorporated type treatments effective in giving season-long annual grass control, but pre-emergence treatments were not; EPTC only effective material on heavy stand of nutsedge
REFERENCE: Sanok, W.J., "Evaluation of Herbicides for Control of Weeds in Long Island Potatoes-1973," Proc. Northeast. Weed Sci. Soc. 28:282-286 (1974).

<811>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA 10832
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplant incorporated; 38 gal/A at 20 psi; 4% EC Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight control of broadleafs and moderate control of grasses with no adverse effect on potato yield
COMMENTS: Metribuzin alone or in combination with other materials very effective in controlling barnyard grass and lady's thumb; other chemicals also effective in maintaing commercially acceptable weed control throughout season
REFERENCE: Sanok, W.J. and L.E. Weber, "Evaluation of Potato Herbicides on Long Island 1974," Proc. Northeast. Weed Sci. Soc. 29:316-318 (1975).

<812>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA-10832
PLANT: Beggarweed, Florida (DESMODIUM TORTUOSUM); Pusley, Florida (RICHARDIA SCABRA) ; Peanut (ARACHIS HYPOGAEA); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.25, 0.50, 0.75, 1.0, 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Herbicides applied broadcast in 16 to 19 gallons of water per acre, spraying pressure 30psi using tractor-mounted compressed air sprayer; preplanting and preemergence applications
EXPERIMENTAL CONDITIONS: Dothan loamy sand; soil turned each winter and seedbeds prepared in March or early April; plots -- 6 rows wide each 20 feet long; herbicides in rows 3,4,5 and 6 incorporated 4 to 6 inches; peanuts planted immediately after incorporation; rows 1 and 2 had preemergence application
EFFECTS: 0.75, 1.5 and 1.0 lb/A gave almost complete control of annual grassweeds; preemergence applications less effective than preplant incorporated herbicides; broadleaf weed control generally less than grassweed control; no noticeable injury to peanut foliage
COMMENTS: Excellent control of annual grass weeds and substantial broadweed control; in general, increasing application rate of preemergence herbicides improved weed control; no measurable differences in weed control among herbicides tested
REFERENCE: Buchanan, G.A., R.D. McLaughlin, J. Bannon, and H. Ivy, "Performance of Dinitroaniline Herbicides in Peanuts," Proc. S. Weed Sci. Soc. 26: 95-105 (1973).

<813>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Profluralin
PLANT: Cabbage (BRASSICA OLERACEA); Purslane, common (PORTULACA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pineappleweed (MATRICARIA MATRICARIODY)
EXPERIMENTAL DOSE: 0.75 lb/A
APPLICATION METHODS: Preplant incorporated; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; supplemental irrigation; crops direct seeded
EFFECTS: Moderate weed control except pineappleweed (no control) with slight phytotoxicity to cabbage
COMMENTS: Outstanding candidates for selectivity in seeded cabbage and control of barnyardgrass, purslane, and pineappleweed were H22234 and oryzalin; alachlor also gave excellent control but initial stunting of cabbage seedlings; by end of the season, phytotoxicity not visible with alachlor or any other treatment.
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicides for Weed Control in Sweet Corn and Cabbage," Proc. Northeast. Weed Sci. Soc. 31:256-260 (1977).

<814>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA-10832
PLANT: Grasses; Broadleaf weeds; Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.75, 1.00, and 1.25 lb/A
APPLICATION METHODS: Preplant incorporated; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 13 locations in Iowa
EFFECTS: Effective control of grasses and moderate control of broadleaf weeds with no adverse effect on soybean
COMMENTS: Dinitroaniline chemicals applied at proper rates for organic matter levels present provided good to excellent grass control; rate probably more critical for organic matter on BAS-3901, CG-10832 and dinitramine than for trifluralin; organic matter exceedingly critical for nitraline; vernolate provided good grass control and at most locations, better broadleaf control than dinitroaniline chemicals; preplant incorporated plus overlay treatment can increase broadleaf and overall weed control and usually result in less phototoxicity to the crop
REFERENCE: Jennings, V.M., D.W. Staniforth, and W.G. Lovely, "Soybean Herbicide Evaluations Across Iowa in 1973," Proc. N. Cent. Weed Contr. Conf. 28:42-45 (1973).

<815>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA-10832
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete, moderate, and poor control at 10(-5), 10(-6), and 10(-7)M, respectively
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<816>
<816>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Profluralin
PLANT: Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA LUTESCENS); Sunflower (HELIANTHUS ANNUUS); Velvetleaf (ABUTILON THEOPHRASTI); Venice mallow (HIBISCUS TRIONUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed (AMARANTHUS sp.); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 and 1.25 lb/A
APPLICATION METHODS: Preplanting incorporated treatments; 1.5 gal capacity plot sprayer regulated to apply 30 gal per acre; 4% EC formulation
EXPERIMENTAL CONDITIONS: Test compound mixed with water to make 1 gal of spray solution; 3 replicates, randomized complete block design; 4 to 5 rows wide by 40 ft long; multiple test locations
EFFECTS: Grass control--79 and 84% of 1.0 and 1.25 lb/A, respectively; broadleaf weed control--45 and 67% of 1.0 and 1.25 lb/A, respectively, no soybean injury reported
COMMENTS: Foxtails--grasses; other weeds--broadleaf; combinations of herbicides also teste d
REFERENCE: Seim, A.L. and V.M. Jennings, "Soybean Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:54-58 (1975).

<817>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA-10832
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 0.75 and 1.50 lb/A
APPLICATION METHODS: Preplant spray with soil incorporation (3 in. depth) by rototilling; combined herbicides and types of applications studied; 4% EC
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7
EFFECTS: Effective control of pigweed and slight to moderate control of remaining weeds with slight damage to cucumbers and moderate damage to squash
COMMENTS: Control of crabgrass, pigweed, ragweed and lambsquarters in seeded cucumbers and squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence, and preemergence applications of chloramben methyl ester alone; in cucumbers only, bensulide preplant incorporated + chloramben methyl ester preemergence, bensulide preplant incorporated + dinoseb preemergence over activated charcoal, and nitralin preemergence gave excellent full-season weed control
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<818>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA-10832
PLANT: Soybean (GLYCINE MAX); Velvetleaf (ABUTILON THEOPHRASTI); Millet, foxtail (SETARIA ITALICA)
EXPERIMENTAL DOSE: 1X10(-5), 1X10(-6), and 1X10(-7)M
APPLICATION METHODS: Solution addition to sand (75 ml/pot in greenhouse study); solution addition to nutrient agar (laboratory study)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand culture in pots (cups); temperature--21 C (day) and 17 C (night); evaluation time--28 days; laboratory study; temperature--30 C in darkened incubator
EFFECTS: At 1X10(-5)M, growth reduction for all species
COMMENTS: Dinitramine most toxic to each species; dinitramine, trifluralin, and BAS-3921 H most inhibitory of soybean shoot growth, while oryzalin, dinitramine, and BAS-3921 H most inhibitory of root growth
REFERENCE: Harvey, R.G., "Relative Phytotoxicities of Dinitroaniline Herbicides," Weed Sci. 21(6):517-520 (1973).

<819>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA-10832
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Preplanting incorporated; application at 17.6 gpa in 1972 and 21 gpa in 1973
EXPERIMENTAL CONDITIONS: Memphis silt loam; field tests; herbicides used at suggested and twice the suggested rates; 2 year experiment; randomized complete block design with 4 replications; plots--eight 38-inch rows 30 ft long, 4 center rows harvested for soybean yield determination; entire area plowed before planting each year; dyanap added for broadweed weed control; plots also cultivated at timely intervals; cultivated checks, 9.1 Bu/A (1972), 16.0 Bu/A (1973)
EFFECTS: 1972--85% seedling, 25 and 28% rhizome control on June 13, June 13, and Nov. 11 respectively at 1.0 lb/A, 91% seedling, 41 and 40% rhizome control respectively at 2 lb/A; 1973--65% seedling, 62, 68, and 39% rhizome control on June 4, June 4, Aug. 14, and Nov. 2 respectively at 1.0 lb/A, 77% seedling, 80, 80, and 60% rhizome control respectively at 2 lb/A; soybean yield--21.4 and 25.3 Bu/A in 1972 and 32.4 and 35.4 Bu/A in 1973 at 1 and 2 lb/A respectively
COMMENTS: No soybean injury reported
REFERENCE: Overton, J.R., J.A. Mullins, and L.S. Jeffery, "Control of Johnsongrass in Soybeans with Preplant Incorporated Herbicides," Tenn. Farm Home Sci. Prog. Rep. 90:5-7(1974).

<820>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA 10832
PLANT: Carrot (DAUCUS CAROTA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; seedbeed prepared April 25; 4 replications; weed control evaluated on August 2

<820> CONT.
EFFECTS: Poor pigweed control, good foxtail control
COMMENTS: Herbicide combinations also tested; no injury rating for carrots; heavy rains delayed planting until May 2
REFERENCE: Noll, C.J., "Evaluation of Eight Herbicides Alone and in Combination for Weed Control in Carrots," Proc. Northeast. Weed Sci. Soc. 28:167-171 (1974).

<821>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA 10832
PLANT: Panicum, Texas (PANICUM TEXANUM); Sida, spiny (SIDA SPINOSA); Cotton (GOSSYPIUM HIRSUTUM); Peanut (ARACHIS HYPOGAEA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.56, 1.12, and 1.68 kg/ha
APPLICATION METHODS: Preplanting incorporated; application by experimental-plot tractor-sprayer
EXPERIMENTAL CONDITIONS: Field study; randomized block design, 2.74 by 7.62 m plots with 3 replications; Vanoss loam soil--pH of 5.1, 1.2% organic matter; 3 crops and 2 weed species, crop rows 7.62 m long with 7.62 cm centers, weeds planted between crop rows; visual ratings after 16 days
EFFECTS: Panicum control--87, 97, and 97% at respective rates; prickly sida control--7, 13, and 53% at respective rates; cotton injury--13, 10, and 0% of crop at respective rates; peanut injury--3, 3, and 7% of crop at respective rates; soybean injury--no injury at any rate
COMMENTS: Comparison of 9 dinitroaniline compounds; cotton was least tolerant of increased dinitroaniline herbicide rates, soybeans the most tolerant; definable phytotoxicity variation as chemical structure changes
REFERENCE: Murray, D.S., P.W. Santelmann, and H.A.L. Greer, "Differential Phytotoxicity of Several Dinitroaniline Herbicides," Agron. J. 65:34-36 (1973).

<822>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Profluralin
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Bluegrass, annual (POA ANNUA); Parsley-piert (ALCHEMILLA MICROCORPA); Speedwell, corn (VERONICA ARVENSIS); Clover, hop (TRIFOLIUM AGARIUM); Bermudagrass, common (CYNODON DACTYLON); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 3.4 kg/ha
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: 3-year test on golf courses, 1-year test at Georgia Experiment Station; loam, sandy clay loam, and sandy loam soils; DCPA, benefin, terbutol, bensulide used as summer chemical checks, pronamide, DCPA, and terbutol used as winter chemical checks; 1.5 by 3.0 m plots, randomized complete block design with 4 replications; summer tests--crabgrass control in turfgrass; winter tests--control of annual bluegrass, parsley-piert, corn speedwell and hop clover; visual ratings
EFFECTS: Crabgrass control--70% avg. for 8 tests (10-96% range); annual bluegrass control--2 years, 94 and 98%; parsley-piert control--2 years, 0 and 96%; corn speedwell control--100%; hop clover control--2 years, 70 and 73%; no significant effect on Kentucky bluegrass or bermudagrass
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<823>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Profluralin
PLANT: Oat, wild (AVENA FATUA); Foxtail, green (SETARIA VIRIDIS); Rapeseed (BRASSICA CAMPESTRIS); Rapeseed (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 1.4 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments applied in 202 l./ha water in 1973 and in 102 l./ha in 1974
EXPERIMENTAL CONDITIONS: Field experiments; sandy loam soil in 1973 test, clay loam soil in 1974 study; plots--6.25 X 1.83 m with 8 rows spaced 22.9 cm apart; randomized complete block design with 4 replicates; control--untreated check
EFFECTS: 1973--1.4 kg/ha gave moderate control of foxtail and wild oat with complete crop tolerance and significant crop yield increase; 1974--good control of both weeds and complete crop tolerance but very little yield increase over untreated check
COMMENTS: Rapeseed--oilseed crop; drought conditions and insects reduced 1974 yields--herbicide effects nullified
REFERENCE: Chow, P.N.P., "Dinitroaniline Herbicides for Grassy Weed Control in Rapeseed," Can. J. Plant Sci. 56:705-713 (1976).

<824>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA-10832
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Squash, summer (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.75 and 1.50 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence; postemergence application of BAS-3512 H only
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7; time period--1972
EFFECTS: Moderate control of all weeds with slight damage to cucumbers and moderate damage to squash
COMMENTS: Effective control of large crabgrass, redroot pigweed, common ragweed and lambsquarters in seeded cucumbers and summer squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence and preemergence applications of chloramben methyl ester alone
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<825>
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CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Profluralin
PLANT: Spinach (SPINACIA OLERACEA); Grasses; Purslane, common (PORTULACA OLERACEA); Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A; 4EC
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence applications
EXPERIMENTAL CONDITIONS: Field study; soil--Norfolk loamy sand; irrigation
EFFECTS: Effective control of all weeds and no adverse effect on lima beans with both application rates
COMMENTS: Acceptable weed control and yields obtained with trifluralin and profluralin; dinitramine significantly reduced stand, vigor, and yields of baby lima beans; alachlor provided acceptable weed control without yield reduction; combined herbicide applications just as effective
REFERENCE: Beste, C.E., "New Herbicides for Lima Beans," Proc. Northeast. Weed Sci. Soc. 29:194-196 (1975).

<826>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA-10832
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A; EC
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: In preplant incorporation application, moderate control of weeds with no adverse effect on corn silage yield
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<827>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA-10832
PLANT: Plants; Potato (SOLANUM TUBEROSUM); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A; 4% EC
APPLICATION METHODS: Postemergence, preemergence, and preplant incorporated sprays; 38 gal/A; 20 psi; granular materials applied with cone-type applicator; varied combined treatments evaluated
EXPERIMENTAL CONDITIONS: Field study; three locations; rye cover crop after harvest
EFFECTS: Moderate control of weeds with no effect on crop plants
COMMENTS: Most treatments did not result in commercially acceptable control levels because of a number of conditions which reduced effectiveness of weed control in 1972
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<828>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CG-10832
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 1.5 lb/A; G and EC
APPLICATION METHODS: Broadcast (G) with spreader; preemergence spray, 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; mature Kentucky bluegrass lawn; soils-sandy and loam; crabgrass seed sown on lawn just prior to applications
EFFECTS: Effective control of crabgrass (G but not EC) and moderate control of goosegrass (G but not EC) with slight damage to turf grass
COMMENTS: A-820, CG-10832, PPG-139 and RP-17623 gave good crabgrass control; April versus May application of several of preemergence types show that specific guidelines are needed to obtain efficient crabgrass control; goosegrass control fair to good for several chemicals, but all materials considered poor to unsatisfactory
REFERENCE: Engel, R.E., C.W. Bussey, and P. Catron, "Crabgrass and Goosegrass Control in Turfgrass with Several Preemerge Herbicides," Proc. Northeast. Weed Sci. Soc. 29:369-371 (1975).

<829>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA 10832
PLANT: Potato (SOLANUM TUBEROSUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: Preemergence 4% EC spray applied at 20 psi pressure and 38 gal/A volume
EXPERIMENTAL CONDITIONS: April planting; plots--2 rows wide by 30 ft long; randomized complete block design; treatments replicated five times in experiments 1 and 3 and four times in others; total of 5 experiments; rye seeded following potato harvest
EFFECTS: Commercially unacceptable weed control; no reported injury to potatoes; no effect on rye cover crop
COMMENTS: Author notes that growing conditions (cool spring and high June rainfall) caused vigorous weed growth and retarded potato growth, thus reason for commercially unacceptable weed control; herbicide combinations also discussed
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<830>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Profluralin
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.8 and 1.7 kg/ha
APPLICATION METHODS: Preplant incorporation; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Bosket sandy loam and Sharkey clay
EFFECTS: Moderate control of johnsongrass at 1.7 kg/ha with very slight initial damage to soybean but no adverse efect on yield
COMMENTS: On Bosket sandy loam soil, best average johnsongrass control over a 2-yr period obtained following profluralin and butralin; these treatments also resulted in highest average soybean yields
REFERENCE: McWhorter, C.G., "Johnsongrass Control in Soybeans with Soil-Incorporated Dinitroaniline Herbicides," Weed Sci. 25(3):264-267 (1977).

<831>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Profluralin
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 0.75, 1.00, 1.50, and 2.00 lb/A
APPLICATION METHODS: Preplant spray; 80 gal/A at 40 psi; soil incorporation (3 in. depth)
EXPERIMENTAL CONDITIONS: Field study; soil--gravelly silt loam
EFFECTS: Moderate control of weeds initially with effective control of grasses later at highest rates and no adverse effect on potato yield
COMMENTS: EPTC and profluralin applied preplant incorporated provided full season control of annual barnyard grass in potatoes; either compound when combined with preemergence herbicides linuron, chlorbromuron, or DNBP provided full season control of BRASSICA NIGRA, BRASSICA CAMPESTRIC, POLYGONUM PERSICARIA, and CHENOPODIUM ALBUM
REFERENCE: Murphy, H.J., "Effect of Several Combinations of Preplant Incorporated and Preemergence Herbicides on Weed Control in Potatoes," Proc. Northeast. Weed Sci. Soc. 29:281-283 (1975).

<832>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA 10832
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Lamb's-quarters (CHENOPODIUM ALBUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preplanting application; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (15-10-10) and diazinon (4.0 lb/A) applied before disking; preplanting herbicides incorporated immediately after application by rototilling
EFFECTS: Moderate control of weeds with no damage to corn
COMMENTS: Combination treatments provided no consistent advantages
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<833>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Profluralin
PLANT: Pea, sweet (PISUM SATIVUM); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Mustard, wild (BRASSICA KABER); Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.84 and 1.68 kg/ha
APPLICATION METHODS: Solution addition to pea seed (germination); field spray 187 l/ha at 183 kg/sq cm; soil incorporation preplant
EXPERIMENTAL CONDITIONS: Greenhouse study--plastic cup culture (germination); silica sand; 21 C (day) and 17 C (night), evaluation time-21 days; field study; soil--Piano silt loam, pH-6.3, evaluation time--21 days and at harvest
EFFECTS: No adverse effect on pea with effective control of weeds
COMMENTS: Field trials conducted over 3-yr period demonstrated that all eight herbicides successfully controlled weeds; use of trifluralin resulted in lowest shelled pea yields; significant reductions in yield occurred from trifluralin in 1973 and 1975 when compared with the untreated checks
REFERENCE: Harvey, R.G. and G.L. Jacques, "Dinitroaniline Herbicides for Weed Control in Peas," Weed Sci. 25(3):256-259 (1977).

<834>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Profluralin
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 0.75 and 1.5 lb/A
APPLICATION METHODS: Preplanting incorporated at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: Minor stand reduction at low rate, slight increase in stand at high rate; excellent weed control
COMMENTS: Herbicide combinations also tested
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<835>
<835>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA-10832
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 micro M to 1.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplast and mung bean hypocotyl assays; evaluation time--up to 3 hr
EFFECTS: Strong inhibition of one or more cyclic or noncyclic photophosphorylation reactions, mitochondrial oxidation of varied substrates, and ATPase activity
COMMENTS: 2,6-dinitroanilines inhibited both electron transport and phosphorylation in isolated chloroplasts and mitochondria; interference with photoproduction of ATP chloroplasts evidenced by increased sensitivity of photophosphorylation over the coupled photoreduction to the 2,6-dinitroanilines when water served as electron donor, and by inhibition of photophosphorylation mediated by PMS in an argon atmosphere
REFERENCE: Moreland, D.E., F.S. Farmer, and G.G. Hussey, "Inhibition of Photosynthesis and Respiration by Substituted 2,6-Dinitroaniline Herbicides," Pest. Biochem. & Phys. 1:342-353 (1971).

<836>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA-10832
PLANT: Millet, foxtail (SETARIA ITALICA); Foxtail, green (SETARIA VIRIDIS); Foxtail, yellow (SETARIA GLAUCA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Grasses; Broadleaf weeds; Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI); Foxtail, giant (SETARIA FABERI); Soybean (GLYCINE MAX); Lamb's-quarters (CHENOPODIUM ALBUM); Purslane, common (PORTULACA OLERACEA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Venice mallow (HIBISCUS TRIONUM)
EXPERIMENTAL DOSE: 0.5 to 4.0 lb/A
APPLICATION METHODS: Preplant incorporated spray; 10 to 30 gal/A at 20 to 30 psi
EXPERIMENTAL CONDITIONS: Field study; locations in 6 states (MI, MO, NE, IL, IA, and OH)
EFFECTS: At 1.0 and 1.5 lb/A, effective control of yellow foxtail and lambsquarters with moderate control of remaining weeds and no adverse effect on soybean
COMMENTS: CGA-10832 gave good control of prevalent weed species throughout growing season; CGA-11607 and CGA-14397 gave inferior weed control compared to CGA-10832; weed control from trifluralin comparable at equivalent rates to CGA-10832, with no significant differences indicated
REFERENCE: LeBaron, H.M., R.R. Wilson, and T.D. Taylor, "Evaluation of CGA-10832 and Other Herbicides for Soybeans in the North Central States," Proc. N. Cent. Weed Contr. Conf. 26:44-48 (1971).

<837>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: CGA-10832
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A; G and EC
APPLICATION METHODS: Preemergence broadcast spreader (G) and spray (WP); 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; established turf with seeding of crabgrass prior to herbicide applications
EFFECTS: At 3.0 lb/A, effective control of weed grasses (G but not EC) and slight damage to turf grasses
COMMENTS: A-820, CGA-10832, and RP-17623 experimental herbicides useful new preemergence herbicides in comparison with commercially available herbicides; two new aniline herbicides have some advantages
REFERENCE: Engel, R.E., C.W. Bussey, and R.D. Ilnicki, "Control of Crabgrass DIGITARIA Species and Goosegrass ELEUSINE INDICA in Turf with Experimental Preemergence Herbicides," Proc. Northeast. Weed Soc. 27:324-330 (1973).

<838>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Profluralin
PLANT: Plants; Bean, snap (PHASEOLUS VULGARIS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Effective control of weeds with no damage to snapbeans and unspecified adverse effect on lima beans
COMMENTS: Profluralin safest on snapbeans and fluchloralin safest on lima beans of herbicides evaluated
REFERENCE: Ilnicki, R.D., D.J. Herman, and J. Somody, "Effects of Some Preplant Incorporated Herbicides on Weed Control in Snapbeans and Lima Beans," Proc. Northeast. Weed Sci. Soc. 29:197-198 (1975).

<839>
CHEMICAL NAME: Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Profluralin
PLANT: Soybean (GLYCINE MAX); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Carpetweed (MOLLUGO VERTICILLATA); Chamomile, corn (ANTHEMIS ARVENSIS); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.5, 1.0, and 1.5 lb/A
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold sandy loam
EFFECTS: Effective control of pigweed and carpetweed; corn chamomile (moderate); shepherd's purse and panicum (slight control) with no adverse effect on soybean
COMMENTS: Most effective dinitroaniline herbicide was dinitroaniline which gave moderate to effective control of all weeds with no adverse effect on soybeans; vigor reduction by some herbicides did not affect yield
REFERENCE: Ilnicki, R.D., D.J. Herman and J. Somody, "The Response of Soybeans to Some Dinitroaniline Herbicides," Proc. Northeast. Weed Sci. Soc. 29:17-18 (1975).

<840>
CHEMICAL NAME: Benzenamine, N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: Prowl
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Pigweed (AMARANTHUS sp.); Goosefoot, nettleleaf (CHENOPODIUM MURALE); Lamb's-quarters (CHENOPODIUM ALBUM); Crabgrass (DIGITARIA sp.); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, common (HORDEUM LEPORINUM); Groundcherry (PHYSALIS LONGIFOLIA); Nutsedge (CYPERUS sp.); Morningglory (IPOMOEA sp.)
EXPERIMENTAL DOSE: 0.5, 0.75, and 1.0 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Field experiments, San Joaquin Valley, California; loamy sand to fine loamy sand soil types, 1% or less organic matter
EFFECTS: Groundcherry, nutsedge, and morningglory, non-susceptible; other weeds susceptible at 0.75 lb/A at 6 locations and 0.5 lb/A at 5 locations; 1.0 lb/A had no effect on cotton
REFERENCE: Nielsen, R.S., "Prowl-Herbicide for Field Corn and Cotton," Proc. West. Soc. Weed Sci. 27:66 (1974).

<841>
CHEMICAL NAME: Benzenamine, N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: AC 92553
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 0.75 and 1.5 lb/A
APPLICATION METHODS: Preplanting incorporated at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: Minor stand reduction at low rate, slight increase in stand at high rate; excellent weed control
COMMENTS: Herbicide combinations also tested
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<842>
CHEMICAL NAME: Benzenamine, N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: Penoxaline
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, large (DIGITARIA SANGUINALIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Preemergence spray in 40 gpa water
EXPERIMENTAL CONDITIONS: Randomized complete block design with 3 replications; 9 x 22 ft plot size; Paxton fine sandy loam; preemergence treatments made May 23, postemergence treatments on June 9; visual rating
EFFECTS: Crabgrass--good all season control; pigweed--moderate all season control; significantly greater corn yield compared to untreated check
REFERENCE: Dest, W.M., R.A. Peters, and M. Barrett, "The Control of Crabgrass and Redroot Pigweed in Silage Corn," Proc. Northeast. Weed Sci. Soc. 30:55-58 (1976).

<843>
CHEMICAL NAME: Benzenamine, N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: AC 92553
PLANT: Pigweed (AMARANTHUS sp.); Purslane, common (PORTULACA OLERACEA); Santa Maria (PARTHENIUM HYSTEROPHORUS); (PHYLLANTHUS AMARUS); Wiregrass (ELEUSINE INDICA); Junglerice (ECHINOCHLOA COLONUM); Crabgrass (DIGITARIA INSULARIS); Nutsedge, purple (CYPERUS ROTUNDUS); Corn (ZEA MAYS); Groundnut (PANAX TRIFOLIUM); Soybean (GLYCINE MAX); Cabbage (BRASSICA OLERACEA); Cotton (GOSSYPIUM HIRSUTUM); Cucumber (CUCUMIS SATIVUS); Onion (ALLIUM CEPA); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.0 and 2.0 kg/ha
APPLICATION METHODS: Preplanting treatment
EXPERIMENTAL CONDITIONS: Loam soil; non-field experiments
EFFECTS: Crops in which safe at 1.0 kg/ha--maize, groundnut, soybean, cotton, and cabbage; crops in which unsafe at 1.0 kg/ha--snapbean, cucumber, and onion; crops in which safe at 2.0 kg/ha--maize, groundnut, and soybean; crops in which unsafe at 2.0 kg/ha--snapbean, cabbage, cotton, cucumber, onion, and tomato; very good weed control at both rates
COMMENTS: Promising herbicides from these studies tested in field
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<844>
CHEMICAL NAME: Benzenamine, N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: AC 92553
PLANT: Corn (ZEA MAYS); Nutsedge, purple (CYPERUS ROTUNDUS); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); (PANICUM ZIZANOIDES); Morningglory (IPOMOEA sp.); Bermudagrass, common (CYNODON DACTYLON); (KALLSTROEMIA MAXIMA); (SORGHUM VERTICILLIFLORUM)
EXPERIMENTAL DOSE: 2 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Clay loam soil; field tests
EFFECTS: 92% maize yield compared to clean-weeded control; moderate overall control of weeds--grasses poorly controlled
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<845>
<845>
CHEMICAL NAME: Benzenamine, N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: Penoxalin
PLANT: Pea, sweet (PISUM SATIVUM); Bean, snap (PHASEOLUS VULGARIS); Pigweed, smooth (AMARANTHUS HYBRIDUS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Pimpernel, common (ANAGALLIS ARVENSIS); Lamb's-quarters (CHENOPODIUM ALBUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); (CRESSA CRETICA); Bluegrass, annual (POA ANNUA); Wireweed (POLYGONUM AVICULARE); Spurrey, corn (SPERGULA ARVENSIS); Chickweed, common (STELLARIA MEDIA); Couchgrass(AGROPYRON REPENS); Speedwell, corn (VERONICA ARVENSIS); Yarrow (ACHILLEA MILLEFOLIUM); Thistle, Canada (CIRSIUM ARVENSE); Thistle, Scotch (CIRSIUM VULGARE); Wartcress (CORONOPUS DIDYMUS); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Storksbill (ERODIUM CICUTARIUM); Ryegrass (LOLIUM sp.); Chamomile, scentless (MATRICARIA INODORA); Ladysthumb (POLYGONUM PERSICARIA); Nightshade, black (SOLANUM NIGRUM); Vetch, common (VICIA SATIVA); Goosegrass (GALIUM APARINE); Barley (HORDEUM DISTICHUM); Juniper, andorra (JUNIPERUS HORIZONTALIS); Groundsel, common (SENECIO VULGARIS); Mustard, hedge (SISYMBRIUM OFFICINALE); Clover, white (TRIFOLIUM REPENS); Nettle, stinging (URTICA URENS); Mallow (MALVA sp.); Bean, broad (VICIA FABA); Lucerne (MEDICAGO SATIVA); Linseed (LINUM USITATISSIMUM); Lupine, narrow-leaf (LUPINUS ANGUSTIFOLIUS); Sunflower (HELIANTHUS ANNUUS); Kumara (IPOMOEA BATATAS); Rape, forage (BRASSICA RAPA); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.5 kg/ha
APPLICATION METHODS: Preplanting incorporated sprays at 300-450 l./ha
EXPERIMENTAL CONDITIONS: Field studies; 2 X 10 m plots with 4 replications; herbicide applied during October, November, and December; weed population assessed every 3 weeks
EFFECTS: Crop yields except corn (reduced emergence and vigor) increased compared to untreated control; partial control--shepherd's purse, storksbill, ryegrass, chamomile willow weed, nightshade and vetch; no control--yarrow, couch grass, Canadian and scotch thistle, twin cress, cleavers, barley, mallow, cornbine, groundsel, hedge mustard, white clover, and nettle; other weeds controlled
COMMENTS: 3kg/ha also tested but no more effective than 1.5 kg/ha
REFERENCE: Moore, R.W., "Penoxalin, A New Selective Herbicide For Weed Control in Peas, Beans and Other Crops," Proc. N. Z. Weed Pest Control Conf. 28: 185-188(1975).

<846>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2, 6-dinitro-N-2-propenyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: BAS-3870-H
PLANT: Oat, wild (AVENA FATUA); Bluegrass, annual (POA ANNUA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Cupgrass, hairy (SETARIA FABERI); Nutsedge, yellow (CYPERUS ESCULENTUS); Spurge, garrden (EUPHORBIA HIPTA) G; Sida, spiny (SIDA SPINOSA); Cucumber (CYNODON DACTYLON); Johnson grass (SORGHUM HALEPENSE); Crabgrass, hairy (DIGITARIA SANGUINALIS); Switchgrass (PANICUM VIRGATUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Cotton (GOSSYPIUM HIRSUTUM); Safflower (CARTHAMUS TINCTORIUS); Pea sweet (PISUM SATIVUM); Goosegrass (ELEUSINE INDICA); Bromegrass, downy (BROMUS TECTORUM); Foxtail, yellow (SETARIA GLAUCA); Witchgrass, old- (PANICUM CAPILLARE); Velvetleaf (ABUTILON HEOPHRASTI); Richardia (RICHARDIA SCABRA); Soybean (GLYCINE MAX); Peanut (ARACHIS HYPOGAEA); Carrot (DAUCUS CAROTA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Blackgrass (ALOPECURUS MYOSUROIDES); Foxtail, green (SETARIA VIRIDIS); Nutsedge, purple (CYPERUS ROTUNDUS); Lamb's-quarters (CHENOPODIUM ALBUM); Morningglory (IPOMOEA sp.); Tomato (LYCOPERSICON ESCULENTUM); Sunflower (HELIANTHUS sp.)
EXPERIMENTAL DOSE: 0.75 and 1.50 kg/ha
APPLICATION METHODS: Preemergence spray; incorporated
EXPERIMENTAL CONDITIONS: Field and greenhouse studies; varied soils
EFFECTS: Moderate to effective control of weeds except CYPERUS spp. and good crop tolerance
COMMENTS: BAS 3870 H and BAS 3920 H acted almost entirely through soil; chemicals penetrated into germinating seeds and also roots of seedlings and had inhibiting effect on weeds, particularly grasses
REFERENCE: Fischer, A., "New Herbicides for Cotton and Soybeans," Proc. Herbicides, Fungicides, and Formulation Chemistry, Gordon and Breach Sci. Pub., pp. 189-196 (1971).

<847>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: BAS-3921-H
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 0.75 and 1.50 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Moderate control of galinsoga in preplanting application; effective control of pigweed; commercially acceptable crop
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<848>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: BAS-3921-H
PLANT: Beggarweed, Florida (DESMODIUM TORTUOSUM); Pusley, Florida (RICHARDIA SCABRA) ; Peanut (ARACHIS HYPOGAEA); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.25, 0.50, 0.75, 1.0, 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Herbicides applied broadcast in 16 to 19 gallons of water per acre, spraying pressure 30psi using tractor-mounted compressed air sprayer; preplanting and preemergence applications
EXPERIMENTAL CONDITIONS: Dothan loamy sand; soil turned each winter and seedbeds prepared in March or early April; plots -- 6 rows wide each 20 feet long; herbicides in rows 3,4,5 and 6 incorporated 4 to 6 inches; peanuts planted immediately after incorporation; rows 1 and 2 had preemergence application
EFFECTS: 0.75, 1.5 and 1.0 lb/A gave almost complete control of annual grass weeds; preemergence applications

<848> CONT.
less effective than preplant incorporated herbicides; broadleaf weed control generally less than grassweed control; no noticeable injury to peanut foliage; substanstial peanut yeidl reduction at higher rates (1.5 lb/A)
COMMENTS: Excellent control of annual grass weeds and substantial broadweed control; in general, increasing application rate of preemergence herbicides improved weed control; no measurable differences in weed control among herbicides tested
REFERENCE: Buchanan, G.A., R.D. McLaughlin, J. Bannon, and H. Ivy, "Performance of Dinitroaniline Herbicides in Peanuts," Proc. S. Weed Sci. Soc. 26: 95-105 (1973).

<849>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluchloralin
PLANT: Couchgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-5) M, 10(-6) M, and 10(-7) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete, moderate, and poor control at 10(-5), 10(-6), and 10(-7) M, respectively
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<850>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluchloralin
PLANT: Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA LUTESCENS); Sunflower (HELIANTHUS ANNUUS); Velvetleaf (ABUTILON THEOPHRASTI); Venice mallow (HIBISCUS TRIONUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed (AMARANTHUS sp.); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments; 1.5 gal capacity plot sprayer regulated to apply 30 gal per acre
EXPERIMENTAL CONDITIONS: Test compound mixed with water to make 1 gal of spray solution; 3 replicates, randomized complete block design; 4 to 5 rows wide by 40 ft long; multiple test locations
EFFECTS: 74% grass control; 61% broadleaf-weed control; no soybean injury reported
COMMENTS: Foxtails--grasses; other weeds--broadleaf; combinations of herbicides also tested
REFERENCE: Seim, A.L. and V.M. Jennings, "Soybean Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:54-58 (1975).

<851>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: BAS-3921-H
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 0.75 and 1.0 lb/A
APPLICATION METHODS: Preplant spray with soil incorporation (3 in. depth) by rototilling; combined herbicides and types of applications studied; 4% EC
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7
EFFECTS: Effective control of pigweed and slight to moderate control of other weeds with slight damage to cucumbers and moderate damage to squash
COMMENTS: Control of crabgrass, pigweed, ragweed and lambsquarters in seeded cucumbers and squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence, and preemergence applications of chloramben methyl ester alone; in cucumbers only, bensulide preplant incorporated + chloramben methyl ester preemergence, bensulide preplant incorporated + dinoseb preemergence over activated charcoal, and nitralin preemergence gave excellent full-season weed control
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<852>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: BAS-3921-H
PLANT: Soybean (GLYCINE MAX); Velvetleaf (ABUTILON THEOPHRASTI); Millet, foxtail (SETARIA ITALICA)
EXPERIMENTAL DOSE: 1X10(-5), 1X10(-6), and 1X10(-7) M
APPLICATION METHODS: Solution addition to sand (75 ml/pot in greenhouse study); solution addition to nutrient agar (laboratory study)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand culture in pots (cups); temperature--21 C (day) and 17 C (night); evaluation time--28 days; laboratory study; temperature--30 C in darkened incubator
EFFECTS: At 1X10(-5) M, growth of all plants was significantly reduced
COMMENTS: Dinitramine most toxic to each species; dinitramine, trifluralin, and BAS-3921 H most inhibitory of soybean shoot growth, while oryzalin, dinitramine, and BAS-3921 H most inhibitory of root growth
REFERENCE: Harvey, R.G., "Relative Phytotoxicities of Dinitroaniline Herbicides," Weed Sci. 21(6):517-520 (1973).

<853>
<853>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: BAS-3921-H
PLANT: Panicum, Texas (PANICUM TEXANUM); Sida, spiny (SIDA SPINOSA); Cotton (GOSSYPIUM HIRSUTUM); Peanut (ARACHIS HYPOGAEA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.56, 1.12, and 1.68 kg/ha
APPLICATION METHODS: Preplanting incorporated; application by experimental-plot tractor-sprayer
EXPERIMENTAL CONDITIONS: Field study; randomized block design, 2.74 by 7.62 m plots with 3 replications; Vanoss loam soil--pH of 5.1, 1.2% organic matter; 3 crops and 2 weed species, crop rows 7.62 m long with 7.62 cm centers, weeds planted between crop rows; visual ratings after 16 days
EFFECTS: Panicum control--90, 97, and 93% at respective rates; prickly sida--3, 27, and 23% at respective rates; cotton injury--7, 0, and 7% of crop at respective rates; peanut injury--3, 0, and 0% of crop at respective rates; soybean injury--no injury at any rate
COMMENTS: Comparison of 9 dinitroaniline compounds; cotton was least tolerant of increased dinitroaniline herbicide rates, soybeans the most tolerant; definable phytotoxicity variation as chemical structure changes
REFERENCE: Murray, D.S., P.W. Santelmann, and H.A.L. Greer, "Differential Phytotoxicity of Several Dinitroaniline Herbicides," Agron. J. 65:34-36 (1973).

<854>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluchloralin
PLANT: Oat, wild (AVENA FATUA); Foxtail, green (SETARIA VIRIDIS); Rapeseed (BRASSICA CAMPESTRIS); Rapeseed (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 1.12, 1.4 and 2.24 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments applied in 202 l./ha water in 1971 and 1973 and in 102 l./ha in 1974
EXPERIMENTAL CONDITIONS: Field experiments--3 years; sandy loam soil in 1973 experiment, clay loam soil in 1971 and 1974 tests; plots--6.25 X 1.83 m with 8 rows spaced 22.9 cm apart; randomized complete block design with 4 replicates; control was an untreated check
EFFECTS: 1971--1.12 kg/ha gave moderate control of foxtail, no significant difference in crop yield when compared to untreated check; 1973 and 1974--1.4 kg/ha gave moderate 1973 control of foxtail and wild oat with a significant increase in crop yield, good 1974 control of foxtail and wild oat and crop yield similar to untreated check; 1971--2.24 kg/ha gave good foxtail control and no significant difference in crop yield compared to untreated check
COMMENTS: Rapeseed--oilseed crop; drought conditions and insects reduced 1974 crop yields; foxtail population very light in 1971
REFERENCE: Chow, P.N.P., "Dinitroaniline Herbicides for Grassy Weed Control in Rapeseed," Can. J. Plant Sci. 56:705-713 (1976).

<855>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: BAS-3921-H
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Squash, summer (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.75 and 1.00 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence; postemergence application of BAS-3512 H only
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7; time period--1972
EFFECTS: Effective control of pigweed and ragweed with slight to moderate control of crabgrass and slight to moderate injury to crop plants in preemergence applications
COMMENTS: Effective control of large crabgrass, redroot pigweed, common ragweed and lambsquarters in seeded cucumbers and summer squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence and preemergence applications of chloramben methyl ester alone
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<856>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluchloralin
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.6 and 1.1 kg/ha
APPLICATION METHODS: Preplant incorporation; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Bosket sandy loam and Sharkey clay
EFFECTS: Moderate control of johnsongrass at 1.1 kg/ha with very slight initial injury to soybean but no adverse effect on yield
COMMENTS: On Bosket sandy loam soil, best average johnsongrass control over a 2-yr period obtained following profluralin and butralin; these treatments also resulted in highest average soybean yields
REFERENCE: McWhorter, C.G., "Johnsongrass Control in Soybeans with Soil-Incorporated Dinitroaniline Herbicides," Weed Sci. 25(3):264-267 (1977).

<857>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluchloralin
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 2.24 and 4.48 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted

<857> CONT.
EFFECTS: In transplant application, moderate control of broadleaf weeds and effective control of grass with phytotoxicity and yield reduction of tomato
COMMENTS: Metribuzin, napropamide, and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<858>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluchloralin
PLANT: Pea, sweet (PISUM SATIVUM); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Mustard, wild (BRASSICA KABER); Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.84 and 1.68 kg/ha
APPLICATION METHODS: Solution addition to pea seed (germination); field spray 187 l/ha at 183 kg/sq cm; soil incorporation preplant
EXPERIMENTAL CONDITIONS: Greenhouse study--plastic cup culture (germination); silica sand; 21 C (day) and 17 C (night), evaluation time-21 days; field study; soil--Plano silt loam, pH-6.3, evaluation time--21 days and at harvest
EFFECTS: No adverse effect on pea with effective control of weeds
COMMENTS: Field trials conducted over 3-yr period demonstrated that all eight herbicides successfully controlled weeds; use of trifluralin resulted in lowest shelled pea yields; significant reductions in yield occurred from trifluralin in 1973 and 1975 when compared with the untreated checks
REFERENCE: Harvey, R.G. and G.L. Jacques, "Dinitroaniline Herbicides for Weed Control in Peas," Weed Sci. 25(3):256-259 (1977).

<859>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluchoralin
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Preplanting incorporated at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: Minor stand reduction at low rate, slight increase in stand at high rate; excellent weed control
COMMENTS: Herbicide combinations also tested
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<860>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: BAS-392-H
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 micro M to 1.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplast and mung bean hypocotyl assays; evaluation time--up to 3 hr
EFFECTS: Strong inhibition of one or more cyclic or noncyclic photophosphorylation reactions, mitochondrial oxidation of varied substrates, and ATPase activity
COMMENTS: 2,6-dinitroanilines inhibited both electron transport and phosphorylation in isolated chloroplasts and mitochondria; interference with photoproduction of ATP chloroplasts evidenced by increased sensitivity of photophosphorylation over the coupled photoreduction to the 2,6-dinitroanilines when water served as electron donor, and by inhibition of photophosphorylation mediated by PMS in an argon atmosphere
REFERENCE: Moreland, D.E., F.S. Farmer, and G.G. Hussey, "Inhibition of Photosynthesis and Respiration by Substituted 2,6-Dinitroaniline Herbicides," Pest. Biochem. & Phys. 1:342-353 (1971).

<861>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluchloralin
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, creeping red (FESTUCA RUBRA); Crabgrass (DIGITARIA ISCHAEMUM)
EXPERIMENTAL DOSE: 1.5, 2.0, 3.0, and 4.0 lb/A
APPLICATION METHODS: Preemergence treatments with CO(2) sprayer at 86 gpa
EXPERIMENTAL CONDITIONS: Crabgrass control studies in turfgrass; 4 x 5 ft plot with 3 replications; herbicides applied May 1, injury ratings on August 22
EFFECTS: 80% crabgrass control at 1.5 lb/A and 97% at 4 lb/A; minor turfgrass injury
COMMENTS: Fescue, bentgrass, and bluegrass tabulated as turfgrass
REFERENCE: Coville, C.M. and J.A. Jagschitz, "Herbicides for Preemergence Crabgrass and Goosegrass Control in Turfgrass--1975," Proc. Northeast. Weed Sci. Soc. 30:367-371 (1976).

<862>
<862>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluchloralin
PLANT: Sugarcane (SACCHARUM sp.); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Preemergence incorporated treatments in 20 gpa water
EXPERIMENTAL CONDITIONS: Mid-May applications, ratings 8 weeks later
EFFECTS: No sugarcane injury; 70% weed control at both rates
COMMENTS: Emergence refers to weeds
REFERENCE: Scott, A.W., Jr. and S.A. Reeves, Jr., "Evaluation of Selected Pre and Postemergence Weed Control Treatments in Sugarcane," Proc. South. Weed Sci. Soc. 30:125-129 (1977).

<863>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluchloralin
PLANT: Plants; Bean, snap (PHASEOLUS VULGARIS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 0.75 and 1.00 lb/A
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Effective control of weeds with no adverse effect on lima bean and unspecified effects on snapbean
COMMENTS: Profluralin safest on snapbeans and fluchloralin safest on lima beans of herbicides evaluated
REFERENCE: Ilnicki, R.D., D.J. Herman, and J. Somody, "Effects of Some Preplant Incorporated Herbicides on Weed Control in Snapbeans and Lima Beans," Proc. Northeast. Weed Sci. Soc. 29:197-198 (1975).

<864>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluchloralin
PLANT: Soybean (GLYCINE MAX); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Carpetweed (MOLLUGO VERTICILLATA); Chamomile, corn (ANTHEMIS ARVENSIS); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.75 and 1.00 lb/A
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold sandy loam
EFFECTS: Effective control of pigweed, carpetweed, and panicum; moderate control of chamomile; and slight control of shepherd's purse with vigor reduction in soybean
COMMENTS: Most effective dinitroaniline herbicide was dinitroaniline which gave moderate to effective control of all weeds with no adverse effect on soybeans; vigor reduction by some herbicides did not affect yield
REFERENCE: Ilnicki, R.D., D.J. Herman and J. Somody, "The Response of Soybeans to Some Dinitroaniline Herbicides," Proc. Northeast. Weed Sci. Soc. 29:17-18 (1975).

<865>
CHEMICAL NAME: Benzenamine, N-(2-chloroethyl)-2,6-dinitro-N-2-propenyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: BAS-3870
PLANT: Carrot (DAUCUS CAROTA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; seedbeed prepared April 25; 4 replications; weed control evaluated on August 2
EFFECTS: Poor pigweed control, good foxtail control
COMMENTS: Herbicide combinations also tested; no injury rating for carrots; heavy rains delayed planting until May 2
REFERENCE: Noll, C.J., "Evaluation of Eight Herbicides Alone and in Combination for Weed Control in Carrots," Proc. Northeast. Weed Sci. Soc. 28:167-171 (1974).

<866>
CHEMICAL NAME: Benzenamine, N-(2'-chloroethyl)-2,6-dinitro-N-propyl-4-trifluoromethyl)-
CHEMICAL COMMON NAME: BAS-3920-H
PLANT: Oat, wild (AVENA FATUA); Bluegrass, annual (POA ANNUA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Cupgrass, hairy (SETARIA FABERI); Nutsedge, yellow (CYPERUS ESCULENTUS); Spurge, garden (EUPHORBIA HIRTA); Sida, spiny (SIDA SPINOSA); Cucumber (CUCUMIS SATIVUS); Bean, snap (PHASEOLUS VULGARIS); Bermudagrass, common (CYNODON DACTYLON); Johnson grass (SORGHUM HALEPENSE); Crabgrass, hairy (DIGITARIA SANGUINALIS); Switchgrass (PANICUM VIRGATUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Cotton (GOSSYPIUM HIRSUTUM); Safflower (CARTHAMUS TINCTORIUS); Pea, sweet (PISUM SATIVUM); Goosegrass (ELEUSINE INDICA); Bromegrass, downy (BROMUS TECTORUM); Foxtail, yellow (SETARIA GLAUCA); Witchgrass, old- (PANICUM CAPILLARE); Velvetleaf (ABUTILON THEOPHRASTI); Richardia (RICHARDIA SCABRA); Soybean (GLYCINE MAX); Peanut (ARACHIS HYPOGAEA); Carrot (DAUCUS CAROTA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Blackgrass (ALOPECURUS MYOSUROIDES); Foxtail, green (SETARIA VIRIDIS); Nutsedge, purple (CYPERUS ROTUNDUS); Lamb's-quarters (CHENOPODIUM ALBUM); Morningglory (IPOMOEA sp.); Tomato (LYCOPERSICON ESCULENTUM); Sunflower (HELIANTHUS sp.)
EXPERIMENTAL DOSE: 0.75 and 1.50 kg/ha
APPLICATION METHODS: Preemergence spray; incorporated
EXPERIMENTAL CONDITIONS: Field and greenhouse studies; varied soils
EFFECTS: Moderate to effective control of weeds except CYPERUS spp. and good crop tolerance
COMMENTS: BAS 3870 and BAS 3920 H acted almost entirely through soil; chemicals penetrated into germinating seeds and also roots of seedlings and had inhibiting effect on weeds, particularly grasses
REFERENCE: Fischer, A., "New Herbicides for Cotton and Soybeans," Proc. Herbicides, Fungicides, and Formulation Chemistry, Gordon and Breach Sci. Pub., pp. 189-196 (1971).

<867>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Panicum, fall (PANICUM DICHOTOMIFLORUM); Grasses; Broadleaf weeds; Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 1.2 and 12.0 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth)
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam; time period--1975 and 1976
EFFECTS: Effective control of all weeds at both rates with no adverse effect on alfalfa yield
COMMENTS: Dinoseb, metolachlor, and methazole significantly thinned out alfalfa seedings; benefin, EPTC, profluralin, and butralin were outstanding treatments in grassy weed control; Vel 5052 did good job in controlling fall panicum and other grassy weeds but poor in broadleaf weed control
REFERENCE: Vengris, J. "Annual Weed Control in Alfalfa New Seedlings," Proc. Northeast. Weed Sci. Soc. 31:99-103 (1977).

<868>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Beggarweed, Florida (DESMODIUM TORTUOSUM); Pusley, Florida (RICHARDIA SCABRA) ; Peanut (ARACHIS HYPOGAEA); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.25, 0.50, 0.75, 1.0, 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Herbicides applied broadcast in 16 to 19 gallons of water per acre, spraying pressure 30psi using tractor-mounted compressed air sprayer; preplanting and preemergence applications
EXPERIMENTAL CONDITIONS: Dothan loamy sand; soil turned each winter and seedbeds prepared in March or early April; plots -- 6 rows wide each 20 feet long; herbicides in rows 3,4,5 and 6 incorporated 4 to 6 inches; peanuts planted immediately after incorporation; rows 1 and 2 had preemergence application
EFFECTS: 0.75, 1.5 and 1.0 lb/A gave almost complete control of annual grassweeds; preemergence applications less effective than preplant incorporated herbicides; broadleaf weed control generally less than grassweed control; no noticeable injury to peanut foliage
COMMENTS: Excellent control of annual grass weeds and substantial broadweed control; in general, increasing application rate of preemergence herbicides improved weed control; no measurable differences in weed control among herbicides tested
REFERENCE: Buchanan, G.A., R.D. McLaughlin, J. Bannon, and H. Ivy, "Performance of Dinitroaniline Herbicides in Peanuts," Proc. S. Weed Sci. Soc. 26: 95-105 (1973).

<869>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 2.2 and 4.4 kg/ha
APPLICATION METHODS: Granular application with calibrated 0.9 m-wide lawn spreader; preemergence application in July
EXPERIMENTAL CONDITIONS: Emory clay loam soil; 4 year experiment with fourth year used to determine recovery -- no herbicide application; randomized complete block design with 3 replications and a check; plots measured 0.9 by 4.8 m with 0.3-m border between plots; no border between replications; injury determined by sod loss and foliar damage; lowest rates of application halved, plots treated with high rates applied four times
EFFECTS: First year -- slight foliage browning, no sod loss; second treatment gave no injury; second year -- slight to moderate foliage injury and sod loss; third year -- moderate foliage injury with sod loss persisting into fall dormancy; fourth year -- foliage wilt symptoms peristed through August and September, sod recovered completely
COMMENTS: In general, herbicide effectiveness increases with consecutive annual applications
REFERENCE: Callahan, L.M., "Phytotoxicity of Herbicides to a Tifgreen Bermudagrass Green," Weed Sci. 24(1):92-98(1976).

<870>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Sida, spiny (SIDA SPINOSA); Pigweed (AMARANTHUS sp.); Cocklebur, common (XANTHIUM PENSYLVANICUM); Sicklepod (CASSIA OBTUSIFOLIA); Peanut (ARACHIS HYPOGAEA); Grasses; Broadleaf weeds; Nutsedge, yellow (CYPERUS ESCULENTUS); Beggarweed, Florida (DESMODIUM TORTUOSUM); Pusley, Florida (RICHARDIA SCABRA)
EXPERIMENTAL DOSE: 1.12 and 1.5 kg/ha
APPLICATION METHODS: Preplant spray; 13 to 38 gal/A; postemergence spray; 30 psi
EXPERIMENTAL CONDITIONS: Field study; locations in 5 states (AL, FL, GA, NC, and VA); time period--1971 and 1972; evaluation times--varied, up to 161 days
EFFECTS: Effective control of grass weeds (except nutsedge) and slight or no control of broadleafs with no adverse effect on peanut in preplant applications
COMMENTS: Alachlor/dinoseb applied postemergence over vernolate improved control of Florida beggarweed, sicklepod, fall panicum and crabgrass, and over benefin improved control of Florida beggarweed, sicklepod, and yellow nutsedge; alachlor/dinoseb applied postemergence provided fair to good Florida beggarweed control
REFERENCE: Andrews, O.N., F.D. Timmons, W.L. Currey, and G.A. Buchanan, "An Evaluation of Alachlor and Dinoseb Applied Postemergence in Peanuts," Proc. South. Weed Sci. Soc. 26:106-118 (1973).

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<871>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Broadleaf weeds; Purslane, common (PORTULACA OLERACEA); Plants
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Preemergence incorporated (by irrigation); preplant incorporated (disking); pretransplant
EXPERIMENTAL CONDITIONS: Field study; irrigation (sprinkler and furrow); time period--1964, 1965, and 1968
EFFECTS: At highest rate, effective control of all weeds; moderate control at lower rates
REFERENCE: Whiting, F.L., L.F. Lippert, and J.M. Lyons, "Chemical Weed Control in Peppers," Calif. Agric. 24(7):8-9 (1970).

<872>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Plants
EXPERIMENTAL DOSE: 0.5, 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays
EXPERIMENTAL CONDITIONS: Field studies; time period--1967 to 1969; soils--Ramona sandy loam and Greenfield
EFFECTS: Generally effective control of all weeds with slight damage to asparagus in preemergence at 1.0 lb/A and higher rates; slight weed control in postemergence applications
COMMENTS: Chemicals which killed or severely damaged asparagus include monuron, diuron, simazine, sinbar, sindone-B, treflan, tenoran, and CIPC; vegiben marginal; of herbicides tested in these trials for pre-emergence weed control in direct-seeded asparagus, balan, bensulide, and brominal offer most promising results
REFERENCE: Whiting, F.L., F.H. Takatori, and J.M. Lyons, "Weed Control in Asparagus," Calif. Agric. 25(1):4-5 (1971).

<873>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benfluralin
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete, moderate, and poor control at 10(-5), 10(-6), and 10(-7)M, respectively
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<874>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benfluralin
PLANT: Leucaena-browse legume (LEUCAENA LEUCOCEPHALA); (UROCHLOA PANICOIDES); Pigweed, black (TRIANTHEMA PORTULACASTRUM); Guineagrass (PANICUM MAXIMUM)
EXPERIMENTAL DOSE: 1.68 and 3.36 kg/ha
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Experiment 1--greenhouse pot studies, incorporation in top 5 cm soil; experiment 2--field study, 3x3x2 factorial design with 2 replicates, 9.13 by 9.13 m plots, post-emergence cultivation; experiment 3--same as experiment 2 in design, effect of nitrogen studied in relation to herbicides and post-emergence cultivation; experiment 4--4x3 split plot factorial design, investigation of weed control techniques and nitrogen on leucaena establishment
EFFECTS: Pot studies--weed emergence suppressed and no detrimental effect on leucaena emergence at 1.68 kg/ha, leucaena emergence reduced at 3.36 kg/ha; field studies--low rate did not effect weed or leucaena growth on heavy self mulching loam
COMMENTS: Leucaena growth not improved by addition of nitrogen up to 45 kg/ha; burning of windrows of logs on planting area--successful weed control and leucaena growth
REFERENCE: Cooksley, D.G., "A Study of Preplanting Herbicides, Nitrogen, Burning and Post-emergence Cultivation on the Establishment of LEUCAENA LEUCOCEPHALA cv. Peru," Queensl. J. Agric. Anim. Sci. 31(3):271-278 (1974).

<875>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benfluralin
PLANT: Junglerice (ECHINOCHLOA COLONUM); Foxtail (SETARIA sp.); Sandbur (CENCHRUS sp.); Thistle, Russian (SALSOLA KALI); Cocklebur (XANTHIUM sp.); Dandelion (TARAXACUM sp.); Goathead (TRIBULUS TERRESTRIS); Sunflower (HELIANTHUS sp.); Horsenettle (SOLANUM ELAEAGNIFOLIUM); Pepper, Chile
EXPERIMENTAL DOSE: 0.75, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preplanting incorporated and preemergence treatments; sprays of 90 gal water applied at 25 psi
EXPERIMENTAL CONDITIONS: Plot, one 30-ft row; 3-year experiments; randomized block design with 3 replications the first year and 5 replications the second and third years; weed counts made one month after planting; irrigation and hoeing as needed
EFFECTS: Preemergence--69, 49, and 74% weed reduction and 75, 75, and 41% pepper yield at 0.75, 1.5, and 2.0 lb/A, respectively; preplanting--31, 26, and 37% weed reduction and 73, 82, and 73% yield reduction at respective concentrations
COMMENTS: Hoeing time reduced but so was pepper yield; untreated check hoed to control weeds--pepper yield recorded as 100%; rated as a promising herbicide
REFERENCE: Trujillo, P.M. and J.W. Whitworth, "Weed Control in Chile Peppers at the Espanola Valley Branch Station," New Mexico State Univ. Agric. Exper. Station Res. Rep. 213:1-4 (1971).

<876>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Soybean (GLYCINE MAX); Velvetleaf (ABUTILON THEOPHRASTI); Millet, foxtail (SETARIA ITALICA)
EXPERIMENTAL DOSE: 1X10(-5), 1X10(-6), and 1X10(-7)M
APPLICATION METHODS: Solution addition to sand (75 ml/pot in greenhouse study); solution addition to nutrient agar (laboratory study)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand culture in pots (cups); temperature--21 C (day) and 17 C (night); evaluation time--28 days; laboratory study; temperature--30 C in darkened incubator
EFFECTS: At 1X10(-5)M, growth was significantly reduced for velvetleaf and foxtail but to a lesser degree for soybean
COMMENTS: Dinitramine most toxic to each species; dinitramine, trifluralin, and BAS-3921 H most inhibitory of soybean shoot growth, while oryzalin, dinitramine, and BAS-3921 H most inhibitory of root growth
REFERENCE: Harvey, R.G., "Relative Phytotoxicities of Dinitroaniline Herbicides," Weed Sci. 21(6):517-520 (1973).

<877>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Panicum, Texas (PANICUM TEXANUM); Sida, spiny (SIDA SPINOSA); Cotton (GOSSYPIUM HIRSUTUM); Peanut (ARACHIS HYPOGAEA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.12, 1.68, and 2.24 kg/ha
APPLICATION METHODS: Preplanting incorporated; application by experimental-plot tractor-sprayer
EXPERIMENTAL CONDITIONS: Field study; randomized block design, 2.74 by 7.62 m plots with 3 replications; Vanoss loam soil--pH of 5.1, 1.2% organic matter; 3 crops and 2 weed species, crop rows 7.62 m long with 7.62 cm centers, weeds planted between crop rows; visual ratings after 16 days
EFFECTS: Panicum control--83, 97, and 100% at respective rates; prickly sida control--10, 30, and 43% at respective rates; cotton injury--7, 0, and 20% of crop at respective rates; peanut injury--no injury at any rate; soybean injury--no injury at any rate
COMMENTS: Comparison of 9 dinitroaniline compounds; cotton was least tolerant of increased dinitroaniline herbicide rates, soybeans the most tolerant; definable phytotoxicity variation as chemical structure changes
REFERENCE: Murray, D.S., P.W. Santelmann, and H.A.L. Greer, "Differential Phytotoxicity of Several Dinitroaniline Herbicides," Agron. J. 65:34-36 (1973).

<878>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Bermudagrass, common (CYNODON DACTYLON); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 3.4 kg/ha
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: 3-year test on golf courses, 1-year test at Georgia Experiment Station; variety of loam soils; DCPA, benefin, terbutol, and bensulide used used as chemical checks; summer tests; 1.5 X 3.0 m plots, randomized complete block design with 4 replications
EFFECTS: 67% avg. crabgrass control for 10 experiments (23-96% range); no significant injury to Kentucky bluegrass or bermudagrass
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<879>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Bermudagrass, common (CYNODON DACTYLON); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: Preemergence treatments; applied with spreader or mixed with sand and hand-applied
EXPERIMENTAL CONDITIONS: 3-year experiment; Cecil sandy loam; application in July, August, September, and October of all 3 years (1971-1973); 5 X 10 ft plots, split-plot design--dates of treatment as main plots, herbicide treatments as subplots with 4 replications; ratings made year following treatment
EFFECTS: Unsatisfactory crabgrass control, greatest control in October (48%)
COMMENTS: No mention of bermudagrass toxicity
REFERENCE: Johnson, B.J., "Crabgrass Control in Common Bermudagrass Turf from Herbicides Applied the Previous Year," Ga. Agric. Res. 17(2):17-18 (1975).

<880>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 1.3 and 2.5 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments to 7.6 cm depth; both rates applied spring and fall
EXPERIMENTAL CONDITIONS: Four field tests--2 seeded in fall, 2 in spring; fall seedings in September, spring seedings in April; herbicide treatments were main plots, legumes were subplots; early injury and control ratings made 5 to 10 weeks after seeding, later observations made 3 to 4 weeks after initial recordings for spring planting and the following spring for fall plantings
EFFECTS: Alfalfa--low rate gave 13% early injury and 19% late injury, high rate gave 26% early and 51% late injury; clover--low rate gave 28% early and 29% late injury, high rate gave 51% early and 34% late injury; crownvetch--low rate gave 14% early and 25% late injury, high injury gave 23% early and 32% late injury; broadleaf weeds--low rate gave 74% early and 77% late control, high rate gave 84% early and 83%

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late control
COMMENTS: No apparent difference in legume injury from spring and fall treatments; results represent combined fall and spring observations
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<881>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Broom corn (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 ppm; 19.4% EC
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; soil-prepared with varying peat, sand, clay, lime, and loam content; plastic cup culture; temperature--15.7 to 37 C
EFFECTS: Moderately reduced growth in leaf length at 4.0 ppm
COMMENTS: Phytotoxicity of benefin significantly correlated with organic matter content but not with clay or lime content of soils; after 1 month of incubation no significant activity remained from 2 ppm benefin, and after 2 months only slight activity remained from 4 ppm; benefin less persistent than trifluralin and more persistent than nitralin
REFERENCE: Horowitz, M. and T. Blumenfeld, "Behavior and Persistence in Soil of Benefin," Phytoparasitica 2(1):19-24 (1974).

<882>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 1.5 lb/A; G and WS
APPLICATION METHODS: Broadcast (G) with spreader; preemergence spray, 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; mature Kentucky bluegrass lawn; soils-sandy and loam; crabgrass seed sown on lawn just prior to applications
EFFECTS: Moderate control of crabgrass and slight control of goosegrass with no damage to turfgrass
COMMENTS: A-820, CG-10832, PPG-139 and RP-17623 gave good crabgrass control; April versus May application of several of preemergence types show that specific guidelines are needed to obtain efficient crabgrass control; goosegrass control fair to good for several chemicals, but all materials considered poor to unsatisfactory
REFERENCE: Engel, R.E., C.W. Bussey, and P. Catron, "Crabgrass and Goosegrass Control in Turfgrass with Several Preemerge Herbicides," Proc. Northeast. Weed Sci. Soc. 29:369-371 (1975).

<883>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Cucumber (CUCUMIS SATIVUS); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 0.8 kg/ha
APPLICATION METHODS: Preplant spray; 170 l./ha; soil incorporation (5 cm depth); preemergence sprays for nitralin and chloramben
EXPERIMENTAL CONDITIONS: Field study; soil--Faison fine sandy loam; two locations; time period--1967 and 1968; evaluation time--25 da
EFFECTS: Effective control of weeds with initial injury to lettuce but no reduction in yield
COMMENTS: DCPA and nitralin gave best weed control, while benefin and the methyl ester of chloramben less effective in controlling weeds; poorest weed control performance observed with bensulide; nitralin, DCPA, benefin, and methyl ester of chloramben caused crop injury if leaching rains followed application; despite early herbicide injury, yields usually not adversely affected
REFERENCE: Monaco, T.J. and Miller, C.H., "Herbicide Activity in Pickling Cucumber," Weed Sci. 20(6):545-548 (1972).

<884>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Peanut (ARACHIS HYPOGAEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Junglerice (ECHINOCHLOA COLONUM); Bermudagrass (CYNODON DACTYLON); Nightshade (SOLANUM VILLOSUM)
EXPERIMENTAL DOSE: 1.6 kg/ha
APPLICATION METHODS: Postemergence spray; aqueous carrier-500 l./ha; 60 sq m plots
EXPERIMENTAL CONDITIONS: Field study; sprinkle irrigation 24 hr after herbicide application and every 2 wk thereafter; sandy loess soil; temperature--20 to 25 C; RH--51 to 68%; weekly hand weeding of controls; phosphorus addition--500 to 600 kg/ha; monthly cultivation when employed
EFFECTS: Effective weed control with application of herbicides singly, in combination, or in conjunction with monthly cultivation; no or minimal effect on peanut yield
COMMENTS: Evaluation of eleven herbicides or herbicide combinations; hand weeding most effective; benefin alone and benefin/terbutryn, alachlor/ terbutryn, diphenamid/terbutryn, and benefin/alachlor combinations as effective as hand weeding with no adverse effect on peanut yield
REFERENCE: Amir, J. and N. Lifshitz, "Weed Control of Irrigated Peanuts in an Arid Zone," J. Agric. Sci. Camb. 86:623-626 (1976).

<885>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Pea, sweet (PISUM SATIVUM); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Mustard, wild (BRASSICA KABER); Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.84 and 1.68 kg/ha
APPLICATION METHODS: Solution addition to pea seed (germination); field spray 187 l/ha at 183 kg/sq cm; soil incorporation preplant
EXPERIMENTAL CONDITIONS: Greenhouse study--plastic cup culture (germination); silica sand; 21 C (day) and 17 C (night), evaluation time-21 days; field study; soil--Plano silt loam, pH-6.3, evaluation times--21 days and at harvest
EFFECTS: No adverse effect on pea with effective control of weeds
COMMENTS: Field trials conducted over 3-yr period demonstrated that all eight herbicides successfully controlled weeds; use of trifluralin resulted in lowest shelled pea yields; significant reductions in yield occurred from trifluralin in 1973 and 1975 when compared with the untreated checks
REFERENCE: Harvey, R.G. and G.L. Jacques, "Dinitroaniline Herbicides for Weed Control in Peas," Weed Sci. 25(3):256-259 (1977).

<886>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1.25 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Poor sesame tolerance and erratic barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<887>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 micro M to 1.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplast and mung bean hypocotyl assays; evaluation time--up to 3 hr
EFFECTS: Strong inhibition of one or more cyclic or noncyclic photophosphorylation reactions, mitochondrial oxidation of varied substrates, and ATPase activity
COMMENTS: 2,6-dinitroanilines inhibited both electron transport and phosphorylation in isolated chloroplasts and mitochondria; interference with photoproduction of ATP chloroplasts evidenced by increased sensitivity of photophosphorylation over the coupled photoreduction to the 2,6-dinitroanilines when water served as electron donor, and by inhibition of photophosphorylation mediated by PMS in an argon atmosphere
REFERENCE: Moreland, D.E., F.S. Farmer, and G.G. Hussey, "Inhibition of Photosynthesis and Respiration by Substituted 2,6-Dinitroaniline Herbicides," Pest. Biochem. & Phys. 1:342-353 (1971).

<888>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Pretransplant application to soil; rototilling to 3-4 in. depth; broadcast spray; 43 gal/A
EXPERIMENTAL CONDITIONS: Field study; normal cultivation
EFFECTS: Effective weed control; slight loss in vigor of tobacco plants but insignificant effect on yield
COMMENTS: Several herbicides or herbicide combinations provided effective weed control without affecting tobacco yield
REFERENCE: Chapman, W.H., "Weed Control and Crop Tolerance with Various Herbicides Applied to Florida Shade Tobacco", Proc. S. Weed Sci. Soc. 26:170-172 (1973).

<889>
CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 3.0 lb/A; G and WP
APPLICATION METHODS: Preemergence broadcast spreader (G) and spray (WP); 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; established turf with seeding of crabgrass prior to herbicide applications
EFFECTS: Moderate control of grass weeds with slight loss of turfgrass
COMMENTS: A-820, CGA-10832, and RP-17623 experimental herbicides useful new preemergence herbicides in comparison with commercially available herbicides; two new aniline herbicides have some advantages
REFERENCE: Engel, R.E., C.W. Bussey, and R.D. Ilnicki, "Control of Crabgrass DIGITARIA Species and Goosegrass ELEUSINE INDICA in Turf with Experimental Preemergence Herbicides," Proc. Northeast. Weed Soc. 27:324-330 (1973).

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CHEMICAL NAME: Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Benefin
PLANT: Centipede grass (EREMOCHLOA OPHIUROIDES); Bermudagrass, Tifton (CYNODON sp.); Bermudagrass (CYNODON sp.); Zoysiagrass (ZOYSIA JAPONICAA); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 3.4 kg/ha
APPLICATION METHODS: Preemergence spray; 376 l./ha except benefit which was mixed with sand and applied by hand
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy clay loam; turfgrass sprig-planted; herbicides applied 2 to 3 days after planting; time period--1972 to 1974; evaluation time--16.5 mo
EFFECTS: Slight adverse effect on most turfgrass with slight control all weeds
COMMENTS: bensulide only herbicide that satisfactorily controlled grassy weeds during first growing season both years; turfgrass generally grew as well or better in untreated than treated plots
REFERENCE: Johnson, B.J., "Minimal Herbicide Treatments on the Establishment of Four Turfgrasses,," Agron. J. 67(1):786-789 (1975).

<891>
CHEMICAL NAME: Benzenamine, N-ethyl-N(2-methyl-2-propenyl)-2,6-dinitro-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Ethalfluralin
PLANT: Lupine, narrow-leaf (LUPINUS ANGUSTIFOLIUS); Lupine (LUPINUS LUTEUS); Lupine (LUPINUS ALBUS); Turnip, wild (BRASSICA CAMPESTRIS); Lamb's-quarters (CHENOPODIUM ALBUM); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Twincress (CORONOPUS DIDYMUS); Redroot (AMARANTHUS POWELLII); Nightshade, black (SOLANUM NIGRUM); Clover (TRIFOLIUM sp.)
EXPERIMENTAL DOSE: 0.5, 1.0, and 2.0 kg/ha
APPLICATION METHODS: Preplanting incorporated and preemergence treatments
EXPERIMENTAL CONDITIONS: Split plot randomized block design with 4 replicates for each experiment; main plots (4x2 m) split for crop species; weeds assessed by counting 10 0.1 sq. m quadrats per plot; crop effects assessed 4 weeks after spraying
EFFECTS: 1 and 2 kg/ha gave effective weed control when incorporated but little control when applied preemergence; minor to moderate crop dry matter reduction of L. LUTEUS at 2 kg/ha preplanting incorporated
COMMENTS: Preemergence treatments showed less crop damage than preplanting incorporated treatments; L. LUTEUS most sensitive of LUPIN sp.; effects on specific weeds not identified
REFERENCE: Ivens, G.W. and N.J. Withers, "Effect of Herbicide Treatments on Three Lupin Species," N.Z. Weed Pest Control Conf. 29:89-92 (1976).

<892>
CHEMICAL NAME: Benzenamine, N,N-bis(2-chloroethyl)-N-oxide-
CHEMICAL COMMON NAME: OCO-XXX
PLANT: Wheat, durum (TRITICUM DURUM); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.5 to 10.0 g/l.
APPLICATION METHODS: Seed treatment with 10 ml test solution
EXPERIMENTAL CONDITIONS: Seeds placed in petri dishes containing 10 ml test solution; dishes covered at room temperature for 4 days then germinated seeds counted; mortality compared to control reported; ploidy versus toxic effects monitored
EFFECTS: 26.2 and 9.5% mortality tetraploid and hexaploid wheat respectively at 10 g/l.
COMMENTS: T. DURUM, tetraploid; T. AESTIVUM, hexaploid; increase in ploidy accompanied by increased resistance towards cytotoxic action
REFERENCE: Badilescu, I., S. Botis-Simon, and Z. Simon, "Response of Some Seeds of Different Ploidies Towards Alkylating Agents and Some Common Phytotoxica," Rev. Roum. Biochim. 4(4):279-285 (1967).

<893>
CHEMICAL NAME: Benzenamine, N,N-bis(2-chloroethyl)-4-methyl-2,6-dinitro-
CHEMICAL COMMON NAME: AN-56477
PLANT: Beggarweed, Florida (DESMODIUM TORTUOSUM); Pusley, Florida (RICHARDIA SCABRA) ; Peanut (ARACHIS HYPOGAEA); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.25, 0.50, 0.75, 1.0, 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Herbicides applied broadcast in 16 to 19 gallons of water per acre, spraying pressure 30psi using tractor-mounted compressed air sprayer; preplanting and preemergence applications
EXPERIMENTAL CONDITIONS: Dothan loamy sand; soil turned each winter and seedbeds prepared in March or early April; plots -- 6 rows wide each 20 feet long; herbicides in rows 3,4,5 and 6 incorporated 4 to 6 inches; peanuts planted immediately after incorporation; rows 1 and 2 had preemergence application
EFFECTS: 0.75, 1.5 and 1.0 lb/A gave almost complete control of annual grassweeds; preemergence applications less effective than preplant incorporated herbicides; broadleaf weed control generally less than grassweed control; no noticeable injury to peanut foliage
COMMENTS: Excellent control of annual grass weeds and substantial broadweed control; in general, increasing application rate of preemergence herbicides improved weed control; no measurable differences in weed control among herbicides tested
REFERENCE: Buchanan, G.A., R.D. McLaughlin, J. Bannon, and H. Ivy, "Performance of Dinitroaniline Herbicides in Peanuts," Proc. S. Weed Sci. Soc. 26: 95-105 (1973).

<894>
CHEMICAL NAME: Benzenamine, N,N-bis(2-chloroethyl)-4-methyl-2,6-dinitro-
CHEMICAL COMMON NAME: Chlornidine
PLANT: Soybean (GLYCINE MAX); Velvetleaf (ABUTILON THEOPHRASTI); Millet, foxtail (SETARIA ITALICA)
EXPERIMENTAL DOSE: 1X10(-5), 1X10(-6), and 1X10(-7)M
APPLICATION METHODS: Solution addition to sand (75 ml/pot in greenhouse study); solution addition to nutrient agar (laboratory study)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand culture in pots (cups); temperature--21 C (day) and 17 C (night); evaluation time--28 days; laboratory study; temperature--30 C in darkened incubator

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EFFECTS: At 1X10(-5)M, growth reduction for all species
COMMENTS: Dinitramine most toxic to each species; dinitramine, trifluralin, and BAS-3921 H most inhibitory of soybean shoot growth, while oryzalin, dinitramine, and BAS-3921 H most inhibitory of root growth
REFERENCE: Harvey, R.G., "Relative Phytotoxicities of Dinitroaniline Herbicides," Weed Sci. 21(6):517-520 (1973).

<895>
CHEMICAL NAME: Benzenamine, N,N-bis(2-chloroethyl)-4-methyl-2,6-dinitro-
CHEMICAL COMMON NAME: AN-56477
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.75 and 1.50 lb/A
APPLICATION METHODS: Preplanting incorporated; application at 17.6 gpa in 1972 and 21 gpa in 1973
EXPERIMENTAL CONDITIONS: Memphis silt loam; field tests; herbicides used at suggested and twice the suggested rates; 2 year experiment; randomized complete block design with 4 replications; plots--eight 38-inch rows 30 ft long, 4 center rows harvested for soybean yield determination; entire area plowed before planting each year; dyanap added for broadweed weed control; plots also cultivated at timely intervals; cultivated checks, 9.1 Bu/A (1972), 16.0 Bu/A (1973)
EFFECTS: 1972--no seedling control, 24 and 6% rhizome control on June 13 and Nov. 11 at 0.75 lb/A, 16 and 11% rhizome control respectively at 1.5 lb/A; 1973--no seedling, 27, 46, and 23% rhizome control on June 4, June 4, Aug. 14, and Nov. 2 respectively at 0.75 lb/A, 27% seedling, 45, 63, and 24% rhizome control respectively at 1.5 lb/A; soybean yield--11.3 and 20.4 Bu/A in 1972 and 28.1 and 30.8 Bu/A in 1973 at 0.75 and 1.5 lb/A respectively
COMMENTS: No soybean injury reported
REFERENCE: Overton, J.R., J.A. Mullins, and L.S. Jeffery, "Control of Johnsongrass in Soybeans with Preplant Incorporated Herbicides," Tenn. Farm Home Sci. Prog. Rep. 90:5-7(1974).

<896>
CHEMICAL NAME: Benzenamine, N,N-bis(2-chloroethyl)-4-methyl-2,6-dinitro-
CHEMICAL COMMON NAME: AN 56477
PLANT: Panicum, Texas (PANICUM TEXANUM); Sida, spiny (SIDA SPINOSA); Cotton (GOSSYPIUM HIRSUTUM); Peanut (ARACHIS HYPOGAEA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.12, 2.24, and 3.36 kg/ha
APPLICATION METHODS: Preplanting incorporated; application by experimental-plot tractor-sprayer
EXPERIMENTAL CONDITIONS: Field study; randomized block design, 2.74 by 7.62 m plots with 3 replications; Vanoss loam soil--pH of 5.1, 1.2% organic matter; 3 crops and 2 weed species, crop rows 7.62 m long with 7.62 cm centers, weeds planted between crop rows; visual ratings after 16 days
EFFECTS: Panicum control--43, 93, and 80% at respective rates; prickly sida control--3, 30, and 13% at respective rates; cotton injury--0, 3, and 23% of crop at respective rates; peanut injury--0, 3, and 3% of crop at respective rates; soybean injury--none at any rate
COMMENTS: Comparison of 9 dinitroaniline compounds; cotton was least tolerant of increased dinitroaniline herbicide rates, soybeans the most tolerant; definable phytotoxicity variation as chemical structure changes
REFERENCE: Murray, D.S., P.W. Santelmann, and H.A.L. Greer, "Differential Phytotoxicity of Several Dinitroaniline Herbicides," Agron. J. 65:34-36 (1973).

<897>
CHEMICAL NAME: Benzenamine, N,N-bis(2-chloroethyl)-4-methyl-2,6-dinitro-
CHEMICAL COMMON NAME: AN-56477
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.2 and 4.5 kg/ha
APPLICATION METHODS: Preplant incorporation; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Bosket sandy loam and Sharkey clay
EFFECTS: Moderate control of johnsongrass at 4.5 kg/ha with slightly reduced soybean yield
COMMENTS: On Bosket sandy loam soil, best average johnsongrass control over a 2-yr period obtained following profluralin and butralin; these treatments also resulted in highest average soybean yields
REFERENCE: McWhorter, C.G., "Johnsongrass Control in Soybeans with Soil-Incorporated Dinitroaniline Herbicides," Weed Sci. 25(3):264-267 (1977).

<898>
CHEMICAL NAME: Benzenamine, N,N-bis(2-chloroethyl)-4-methyl-2,6-dinitro-
CHEMICAL COMMON NAME: AN-56477
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 micro M to 1.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplast and mung bean hypocotyl assays; evaluation time--up to 3 hr
EFFECTS: Strong inhibition of one or more cyclic or noncyclic photophosphorylation reactions, mitochondrial oxidation of varied substrates, and ATPase activity
COMMENTS: 2,6-dinitroanilines inhibited both electron transport and phosphorylation in isolated chloroplasts and mitochondria; interference with photoproduction of ATP chloroplasts evidenced by increased sensitivity of photophosphorylation over the coupled photoreduction to the 2,6-dinitroanilines when water served as electron donor, and by inhibition of photophosphorylation mediated by PMS in an argon atmosphere
REFERENCE: Moreland, D.E., F.S. Farmer, and G.G. Hussey, "Inhibition of Photosynthesis and Respiration by Substituted 2,6-Dinitroaniline Herbicides," Pest. Biochem. & Phys. 1:342-353 (1971).

<899>
<899>
CHEMICAL NAME: Benzenamine, N,N-bis(2-chloroethyl)-4-methyl-2,6-dinitro-
CHEMICAL COMMON NAME: AN 56477
PLANT: Groundnut (PANAX TRIFOLIUM); (PANICUM ZIZANOIDES); (SORGHUM VERTICILLIFLORUM); (PHYLLANTHUS AMARUS); Nutsedge, purple (CYPERUS ROTUNDUS); (LAGASCEA MOLLIS); Spurge (EUPHORBIA sp.); (KALLSTROEMIA MAXIMA); Sandbur (CENCHRUS ECHINATUS); Morningglory (IPOMOEA sp.)
EXPERIMENTAL DOSE: 1.8 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Field experiment
EFFECTS: High groundnut yields; weed control not good at 42 days
COMMENTS: Effect on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<900>
CHEMICAL NAME: Benzenamine, N,N-bis(2-chloroethyl)-4-methyl-2,6-dinitro-
CHEMICAL COMMON NAME: AN-56477
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Moderate control of weeds and no adverse effect on peanut vigor
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit futher testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<901>
CHEMICAL NAME: Benzenamine, 2,6-dichloro-4-nitro-
CHEMICAL COMMON NAME: Botran
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal
APPLICATION METHODS: Postemergence (postflowering) spray; 50-55 psi to run-off; sprayed 2X
EXPERIMENTAL CONDITIONS: Field (29.5 C) and laboratory (19 C); intact flowers in field and cut flowers in laboratory; spray applied directly to flowers
EFFECTS: At 1.0 lb/100 gal, slight injury when dried 2 or 4 hr at 29.5 C
COMMENTS: Some compounds not phytotoxic after two applications under any conditions (daconil, dithane M-15, dithane Z-78, morsodren, orthocide, phosdrin and thuricide); among phytotoxic chemicals and combinations, there was a greater tendency for injury occurring at 1) high temperature than at the low, 2) fast drying rate than the slow, 3) high temperature at fast rather than slow drying rate, and 4) high temperature at fast drying rate than low temperature at the slow rate
REFERENCE: Engelhard, A.W., "Chemical Sprays: Concentration, Drying Rate and Temperature Effects on Chrysanthemum Flower Quality", Florida State Hort. Soc. 85:370-374 (1973).

<902>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N-ethyl-N-(2-methyl-2-propenyl)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: EL-161
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Pigweed (AMARANTHUS sp.); Lamb's-quarters (CHENOPODIUM ALBUM); Buckwheat, wild (POLYGONUM CONVOLVULUS); Purslane, common (PORTULACA OLERACEA); Buttercup, corn (RANUNCULUS ARVENSIS); Popolo (SOLANUM NIGRUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail (SETARIA sp.); Caltrop (TRIBULUS TERRESTRIS); Goosefoot, pigweed (CHENOPODIUM sp.); Foxtail, bristly (SETARIA VERTICILLATA); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.5 to 3.0 kg/ha
APPLICATION METHODS: Not given but varied
EXPERIMENTAL CONDITIONS: Field study; 134 sites in Greece, Spain, and Turkey; time period--1973 and 1974
EFFECTS: Effective control at 1.0 kg/ha of all weeds except moderate control of POLYGONUM; RANUNCULUS, SOLANUM, and TRIBULUS with some initial loss in cotton vigor but increased yields
COMMENTS: EL-161 pre-plant incorporated provided sufficient initial and residual control of several broadleaf, including SOLANUM NIGRUM, and annual grass weeds
REFERENCE: Skylakakis, G., B. Anastasiadis, J. Buendia, R.M. Bayo, Y. Oran, and W.T. Waldrep, "EL-161, a New Pre-Plant Incorporated Herbicide for Control of Grass and Dicotyledonous Weeds in Cotton," Proc. 12th. British Weed Cont. Conf. 2:795-800 (1974).

<903>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N-ethyl-N-(2-methyl-2-propenyl)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: EL-161
PLANT: Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.75 and 1.50 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, or postemergence sprays; 80 gal/A at 40 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; soil--Caribon gravelly silt loam
EFFECTS: Slight to moderate weed control
COMMENTS: Oryzalin, oryzalin plus metribuzin, and RE 17111 did acceptable job of controlling mustard, lambsquarters, bindweed, ladysthumb, and chickweed; in one test, trifluralin, EPTC, EL-161, oryzalin, or metribuzin did not control quackgrass
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in Potatoes With Several Pre-Plant Incorporated, Preemergence, and Early Post Emergence Herbicides," Proc. N.E. Weed Sci. Soc. 30:235-238 (1976).

<904>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Soybean (GLYCINE MAX);Grasses;Broadleaf weeds
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preplant spray with soil incorporation (5 cm depth); preemergence spray; 188 l./ha; varied combinations of herbicides and types of applications studied
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy clay loam and Cecil sandy loam; 188 l./ha
EFFECTS: Effective control of grass weeds but poor to moderate control of broadleafs with very slight damage to soybean in preplant application
COMMENTS: Sequential treatment of vernolate with linuron, prometryne, or chloramben ester controlled weeds more effectively in soybeans than did trifluralin or nitralin applied with the same preemergence treatments; soybean injury was not severe enough to reduce seed yields in any year.
REFERENCE: Johnson, B.J., "Effect of Herbicide Combinations on Weeds and Soybeans," Weed Sci. 19(6): 740-742 (1971).

<905>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Corn (ZEA MAYS); Horseradish (ARMORACIA LAPATHIFOLIA)
EXPERIMENTAL DOSE: 5 ppm
APPLICATION METHODS: Seedling treatment
EXPERIMENTAL CONDITIONS: Laboratory study; IN VITRO application (24 hr) to two-day seedlings on enamel trays; excision of root tips and coleoptiles; maceration at 15 to 20 C; peroxidase activity determined
EFFECTS: Increased peroxidase activity due to trifluralin in root and coleoptile extracts of corn and horseradish; greater increase in root than in coleoptile
COMMENTS: Peroxidase involved in oxidative processes including lignification and auxin degradation; inhibited cell elongation (and subsequent stunting of plant) characteristic plant response to trifluralin treatment
REFERENCE: Begonia, G.B., B.L. Mercado, and R.P. Robles, "Morphological and Physiological Responses of Crops and Weeds to Trifluralin. VII. Influence of Peroxidase Activity," Phillipp. Agric. 55(5-6):247-252 (1971).

<906>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Tomato (LYCOPERSICON ESCULENTUM); Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Stinkgrass (ERAGROSTIS CILIANENSIS)
EXPERIMENTAL DOSE: 0.25, 0.5, and 1.0 lb/A
APPLICATION METHODS: Pre-planting spray; 34 gal/acre; rotitilling--3 in. deep; EC formulations
EXPERIMENTAL CONDITIONS: Field study; soil--Norfolk loamy sand; evaluation time--one and three months; seven types of application schedules employed selectively
EFFECTS: Effective weed control at 1.0 lb/A of lambs-quarters and grasses for 3 mos with little effect on tomato vigor and yield; combination of trifluralin with other herbicides generally improved effectiveness at selected application rates
COMMENTS: Of a number of herbicides and herbicide combinations evaluated, S-6044 (undisclosed chemistry) applied as preemergence herbicide appeared most promising (excellent weed control without tomato injury)
REFERENCE: Beste, C.E., "Weed Control in Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 28:265-269 (1974).

<907>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 0.75 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Poor control of galinsoga and complete kill of pigweed in preplanting application; no effect on beans
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<908>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Goosegrass (ELEUSINE INDICA); Love-grass (ERAGROSTIS PECTINICEA); Nutsedge, purple (CYPERUS ROTUNDUS); Pigweed, spiny (AMARANTHUS SPINOSUS); Apple of Peru (NICANDRA PHYSOLODES); Purslane, common (PORTULACA OLERACEA); Floras paintbrush (EMILIA SONCHIFOLIA); Spurge, garden (EUPHORBIA HIRTA); Cabbage (BRASSICA OLERACEA); Cabbage, Chinese (BRASSICA PEKINENSIS); Mustard, Chinese (BRASSICA JUNCEA); Mustard, cabbage (BRASSICA CHINENSIS); Radish (RAPHANUS SATIVUS); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplant incorporated; 80 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective control of all weeds with slight or no damage to crop plants except cauliflower (severe damage)

<908>
<908> CONT.
COMMENTS: Vegadex (CDEC) and treflan (trifluralin) suitable herbicides while dymid very toxic to crop; selectivity not due to a single factor but an interaction of morphological, physiological and genetical factors which made particular crop tolerant or susceptible
REFERENCE: Vahidy, A.A., "Differential Tolerance within Certain Cruciferous Crops to Vegadex, CIPC, Dymid and Treflan," Pak. J. Bot. 5(1):79-85 (1973).

<909>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Plants; Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preplant incorporation (2 in. soil depth)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--aprox. 3 mos
EFFECTS: Effective weed control with no adverse effect on chrysanthemum yield at both rates
COMMENTS: Excellent weed control obtained with number of herbicides; only R-7465 and diphenamid used as soil surface treatments and bensulide gave unsatisfacotry control; various herbicide treatments found to affect growth of chrysanthemum plants to different degrees
REFERENCE: Welker, W.V. and J.C. Cialone, "An Evaluation of Herbicides for the Control of Weeds in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 26:51-54 (1972).

<910>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Broadleaf weeds; Grasses; Nutsedge, yellow (CYPERUS ESCULENTUS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.75 and 1.00 lb/A
APPLICATION METHODS: Preplant incorporated by drag-off; 38 gal/A at 20 psi; 4% EC Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of broadleaf weeds, effective control of grasses, and no control of nutsedge with no adverse effect on potato yield
COMMENTS: Incorporated type treatments effective in giving season-long annual grass control, but pre-emergence treatments were not; EPTC only effective material on heavy stand of nutsedge
REFERENCE: Sanok, W.J., "Evaluation of Herbicides for Control of Weeds in Long Island Potatoes-1973," Proc. Northeast. Weed Sci. Soc. 28:282-286 (1974).

<911>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Beggarweed, Florida (DESMODIUM TORTUOSUM); Pusley, Florida (RICHARDIA SCABRA) ; Peanut (ARACHIS HYPOGAEA); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.25, 0.50, 0.75, 1.0, 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Herbicides applied broadcast in 16 to 19 gallons of water per acre, spraying pressure 30psi using tractor-mounted compressed air sprayer; preplanting and preemergence applications
EXPERIMENTAL CONDITIONS: Dothan loamy sand; soil turned each winter and seedbeds prepared in March or early April; plots -- 6 rows wide each 20 feet long; herbicides in rows 3,4,5 and 6 incorporated 4 to 6 inches; peanuts planted immediately after incorporation; rows 1 and 2 had preemergence application
EFFECTS: 0.75, 1.5 and 1.0 lb/A gave almost complete control of annual grass weeds; preemergence applications less effective than preplant incorporated herbicides; broad leaf weed control generally less than grass weed control; no noticeable injury to peanut foliage; at higher rates of application (1.5 lb/A) substantial peanut yield reduction occurred
COMMENTS: Excellent control of annual grass weeds and substantial broadweed control; in general, increasing application rate of preemergence herbicides improved weed control; no measurable differences in weed control among herbicides tested
REFERENCE: Buchanan, G.A., R.D. McLaughlin, J. Bannon, and H. Ivy, "Performance of Dinitroaniline Herbicides in Peanuts," Proc. S. Weed Sci. Soc. 26: 95-105 (1973).

<912>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Clover, red (TRIFOLIUM PRATENSE); Dock, broad-leaf (RUMEX OBTUSIFOLIUS); Bluegrass, annual (POA ANNUA); Wartcress (CORONOPUS DIDYMUS); Chickweed, mouse-ear (CERASTIUM GLOMERATUM); Spurrey, corn (SPERGULA ARVENSIS); Shepherd's purse (CAPSELLA BURSA-PASTORIS)
EXPERIMENTAL DOSE: 0.25, 0.5 and 1.0 kg/ha
APPLICATION METHODS: Treatments applied by small pressure sprayer at volume rate of 280 l./ha and 2.5 kg/cm2 pressure; preplanting application
EXPERIMENTAL CONDITIONS: Manawatu sandy loan; 16 mainplots each 3 x 1M for herbicide treatments and subplots (1.5x1m) as source of dock infestation; herbicides incorporated into top 7.5 cm soil by rotary cultivation; yields measured in kg/ha; seedlings and rootstock
EFFECTS: Seedling dock yield -- 0.25 kg/ha gave almost no reduction, 0.5 gave about 70% reduction, 1 kg/ha gave more than 90% reduction; dock regeneration from rootstock was less susceptible than seedlings; 1 kg/ha reduced rootstock generated dock by 50% at day 45 and 30% at day 236; good control of annual bluegrass at 0.5 and 1 kg/ha (70 and 95% reduction respectively); wart-cress, mouse-ear chickweed, corn spurrey and shepherdspurse not affected
COMMENTS: Mode of action is inhibition of cell division and expansion in meristems; trifluralin-- strongly bound to soil particles and only kills plants in treated zone, plants penetrating through treated zone from above or below survive
REFERENCE: Brock, J.L., "The Control of Broad-Leaved Dock (RUMEX OBTUSIFOLIUS) in Newly-Sown Red Clover (TRIFOLIUM PRATENSE) with Trifluralin, Carbetamide and Asulam," Weed Res. 12:310-315 (1972).

<913>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Purslane, common (PORTULACA OLERACEA); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.75 and 1.5 lb/A
APPLICATION METHODS: Formulation -- 5% G and 4 lb/gal emulsifiable concentrate; granules applied with auger feed applicator calibrated for each treatment; sprays applied in 50 gallon solution per acre; preplanting application
EXPERIMENTAL CONDITIONS: Chrysanthemums commercially grown two seasons on gravelly sandy loam; roots dipped in activated carbon to reduce herbicide injury to chrysanthemums
EFFECTS: Purslane satisfactorily controlled at higher application; no noticeable injury to chrysanthemums
COMMENTS: During first growing season, flooding affected herbicide incorporation and chrysanthemum growth; no treatment controlled weeds all season without injury to chrysanthemums; use of multiple applications not thoroughly investigated; suggestions given for sequential herbicide use
REFERENCE: Ahrens, J.F., "Weed Control in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 28:386-394(1974).

<914>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Quackgrass (AGROPYRON REPENS); Nutsedge, yellow (CYPERUS ESCULENTUS); Lamb's-quarters (CHENOPODIUM ALBUM); Yew, upright (TAXUS CUSPIDATA); Chickweed, common (STELLARIA MEDIA); Horseweed (ERIGERON CANADENSIS); Vetch, bird (VICIA CRACCA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Carpetweed (MOLLUGO VERTICILLATA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Formulation -- 4 lb/gal EC; sprays applied with hand-held boom to deliver 50 gal/A
EXPERIMENTAL CONDITIONS: Yews (5 years old) spaced at 2 foot intervals in rows 3 feet apart; herbicides applied on December 1, 1970 and again on December 9, 1971; soil was moist and 39 degree F at 3 inch depth at 1970 treatment, air temperature was 45 degrees F; December 1971 application -- 1 to 3 inches snow on ground and air temperature 39 degrees F
EFFECTS: Quackgrass -- no control; nutsedge -- no control; annual weeds -- some extended control; no appreciable injury to yews
COMMENTS: Excessive rainfall second growing season accelerated herbicide leaching; results of weed control with combinations of herbicides reported
REFERENCE: Ahrens, J.F., "Fall Applications of Herbicides for Control of Quackgrass and Yellow Nutsedge in TAXUS CUSPIDATA CAPITATA," Proc. Northeast. Weed Sci. Soc. 28:379-385(1974).

<915>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Cane, wild (SORGHUM BICOLOR); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5, 1, and 2 lb/A
APPLICATION METHODS: Greenhouse -- applied on soil surface and leached with 1 in. water or incorporated into 0(just beneath surface), 1, 1 to 2, or 2-3 in. soil layer; field studies -- herbicide incorporated at 2-in. depth
EXPERIMENTAL CONDITIONS: Greenhouse study -- Sharpsburg silty clay loam soil, 4-in. pots, 5 plants per pot, each treatment replicated 3 times; field study -- plots included natural infestation of wild cane, wild cane planted 1-in. deep and wild cane planted 4 in. deep; 3 year study
EFFECTS: Greenhouse study -- trifuralin was most effective at 0 and 1-in. planting depths , above wild cane planting depth; field study -- 50-75% wild cane control at 1 lb/A and about 80-90% control at 2 lb/A, better control of wildcane at 1 and 4-in. depth than in the natural infestation plot
COMMENTS: Herbicides more effective than cultivation, but combination gave best control of wild cane; trifluralin gave better control than vernolate and vernolate gave better control than DCPA; incorporation by rototilivator controlled wild cane better than rotary hoe incorporation
REFERENCE: Burnside, O.C., "Control of Wild Cane in Soybeans," Weed Sci. 16(1):18-22(1968).

<916>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS) ; Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Crabgrass, large (DIGITARIA SANGUINALIS); Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 0.56 kg/ha
APPLICATION METHODS: Preplant incorporated application with an Oxford Precision Sprayer at a rate of 280 l./ha with 2 kg/cm2 pressure
EXPERIMENTAL CONDITIONS: Sandy loam soil; spinach plants 10 cm apart in rows 1m apart; plot -- 3 rows 3m long; 4 replications of each treatment; weeds per 930 sq cm were counted; plants harvested from center of each plot 37 days after emergence
EFFECTS: Good control of lamb's-quarters, crabgrass, and redroot pigweed; no report of plant nitrate accumulation
COMMENTS: Increase in plant nitrate can result from soil or lower nitrate reductase activity; authors think that decrease in some phase of nitrate reduction by herbicide action is responsible for nitrate accumulation
REFERENCE: Cantliffe, D.J. and S.C. Phatak, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Spinach," Hortscience 9(5):470-472 (1974).

<917>
<917>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Cotoneaster (COTONEASTER sp.); Euonymus (EUONYMUS FORTUNEI); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Millet, foxtail (SETARIA ITALICA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA)
EXPERIMENTAL DOSE: 0.22 g/m2
APPLICATION METHODS: Treatments replicated 5 times
EXPERIMENTAL CONDITIONS: Soil -- 1 sphagnum peat: 1 horticultural grade perlite; crop plants cotoneaster and euonymus placed in plastic 1 gal pots, 20 seeds of each weed species planted in each pot; activated carbon placed in soil to protect crop roots and on surface to absorb herbicide
EFFECTS: Unsatisfactory weed control; trifluralin plus dichlobenil gave good weed control
COMMENTS: Herbicides used safely for containerized nursery stock grown in porous media when activated carbon mixed in soil medium and when herbicide is incorporated into activated carbon-free layer on surface of soil; activated carbon absorbs herbicide before injury to crop roots occur
REFERENCE: Carpenter, P.L., "Chemical Weed Control in Container-grown Nursery Stock," Hortscience 8(5):385-386 (1973).

<918>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 4% EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate control of all weeds with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<919>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Cabbage (BRASSICA OLERACEA); Purslane, common (PORTULACA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pineappleweed (MATRICARIA MATRICARIODY)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Preplant incorporated; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; supplemental irrigation; crops direct seeded
EFFECTS: Moderate control of weeds except pineappleweed (no control) and no adverse effect on cabbage
COMMENTS: Outstanding candidates for selectivity in seeded cabbage and control of barnyardgrass, purslane, and pineappleweed were H22234 and oryzalin; alachlor also gave excellent control but initial stunting of cabbage seedlings; by end of the season, phytotoxicity not visible with alachlor or any other treatment.
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicides for Weed Control in Sweet Corn and Cabbage," Proc. Northeast. Weed Sci. Soc. 31:256-260 (1977).

<920>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Broadleaf weeds; Purslane, common (PORTULACA OLERACEA); Plants
EXPERIMENTAL DOSE: 0.5, 1.0, and 2.0 lb/A
APPLICATION METHODS: Preemergence incorporated (by irrigation); preplant incorporated (disking); pretransplant
EXPERIMENTAL CONDITIONS: Field study; irrigation (sprinkler and furrow); time period--1964, 1965, and 1968
EFFECTS: At highest rate, effective control of all weeds; moderate control at lower rates
REFERENCE: Whiting, F.L., L.F. Lippert, and J.M. Lyons, "Chemical Weed Control in Peppers," Calif. Agric. 24(7):8-9 (1970).

<921>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Grasses; Broadleaf weeds; Sicklepod (CASSIA OBTUSIFOLIA); Morningglory (IPOMOEA sp.); Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preplant spray; 188 l./ha (incorporated, 5 cm depth) or 282 l./ha (injected, 5 cm depth)
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy loam or Cecil clay loam; time period--1969 to 1971
EFFECTS: Preplant incorporated--effective control of grasses and generally moderate control of broadleaf weeds and little or no damage to sunflower
COMMENTS: Alachlor applied in combination with either chlorpropham or prometryne satisfactorily controlled grasses and broadleaf weeds in sunflowers planted in April and June from 1969 through 1971; higher percentage of broadleaf weeds controlled with herbicides applied preemergence to sunflowers planted in April than when applied to sunflowers planted in June.
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Preplant or Preemergence on Weeds and Sunflowers," Crop Sci. 12(1):650-653 (1972).

<922>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Grasses; Broadleaf weeds; Plants; Mustard, wild (BRASSICA KABER)
EXPERIMENTAL DOSE: 0.75 and 1.00 lb/A
APPLICATION METHODS: Preplant incorporated; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 13 locations in Iowa
EFFECTS: Effective control of grasses and moderate control of broadleaf weeds with no adverse effect on soybean
COMMENTS: Dinitroaniline chemicals applied at proper rates for organic matter levels present provided good to excellent grass control; rate probably more critical for organic matter on BAS-3901, CG-10832 and dinitramine than for trifluralin; organic matter exceedingly critical for nitraline; vernolate provided good grass control and at most locations, better broadleaf control than dinitroaniline chemicals; preplant incorporated plus overlay treatment can increase broadleaf and overall weed control and usually result in less phototoxicity to the crop
REFERENCE: Jennings, V.M., D.W. Staniforth, and W.G. Lovely, "Soybean Herbicide Evaluations Across Iowa in 1973," Proc. N. Cent. Weed Contr. Conf. 28:42-45 (1973).

<923>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-3), 10(-4), and 10(-5)M; moderate control at 10(-6)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<924>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Shepherd's purse (CAPSELLA BURSA-PASTORIS); Chickweed, common (STELLARIA MEDIA); Cabbage (BRASSICA OLERACEA); Ragwort, common (SENECIO VULGARIS); Bluegrass, annual (POA ANNUA); Bird's eye (VERONICA PERSICA)
EXPERIMENTAL DOSE: 1.1 kg/ha
APPLICATION METHODS: Preplanting incorporated application by knapsack sprayer at 730 l/ha volume
EXPERIMENTAL CONDITIONS: Medium sandy clay loam; 5 rows per plot, plot length 3 m in early experiments and 5.5 m in later experiments with 6 and 4 replicates of each treatment respectively; 3 experiments, no herbicides in experiment 2
EFFECTS: Experiment 1--excellent overall weed control, greatly reduced numbers of chickweed and bluegrass, sheperd's-purse and common ragwort resistant, no injury to crop; experiment 3--considerably reduced weed population, altered weed population, no injury to crop
COMMENTS: Chickweed--main weed species responsible for crop loss if not controlled; plants resistant to trifluralin were controlled by crop competition
REFERENCE: Lawson, H.M., "Weed Competition in Transplanted Spring Cabbage," Weed Res. 12:254-267 (1972).

<925>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 50 ppm
EXPERIMENTAL CONDITIONS: Rice seedlings allowed to grow 3, 5 and 7 days; entire shoot and 5 mm root tip harvested in the cold at 6, 12, 24 and 48 hours after each treatment; analysis to determine change in free amino acid content
EFFECTS: Chromatogram showed decrease or absence of amino acids asparate and glutamate, increase of arginine, asparagine and glutamine and a general decrease of leucine, alamine, glycine, methionine, phenylalanine, valine, serine and histidine; 3-day old seedlings showed amino acid alteration as early as 6 hr after treatment; 5 or 7-day old seedlings required 24 to 48 hr to exhibit changes
COMMENTS: Postulation--trifluralin causes shift in metabolism of glumate and asparate towards formation of arginine, glutamine and asparagine
REFERENCE: Lapade, B.E. and B.L. Mercado, "Morphological and Physiological Responses of Crops and Weeds to Trifluralin. VI. Free Amino Acid Content of the Rice Seedling," Phillipp. Agric. 55(5-6):239-246 (1971).

<926>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Prince of Wales feather (AMARANTHUS POWELLII); Wireweed (POLYGONUM AVICULARE); Cress, pepper (LEPIDIUM HYSSOPIFOLUM); Lettuce, prickly (LACTUCA SCARIOLA); Lamb's-tongue (PLANTAGO LANCEOLATA); Couchgrass (CYNODON DACTYLON); Prairie grass (BROMUS sp.); Love-grass (ERAGROSTIS sp.); Lamb's-quarters (CHENOPODIUM ALBUM); Sowthistle, annual (SONCHUS OLERACEUS); Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Late August treatments applied with knapsack sprayer at 30 psi pressure and calibrated to deliver 600 l/ha
EXPERIMENTAL CONDITIONS: 1 year old peach trees; 4 replicates, 2 trees in each plot; sandy clay loam soil; herbicides applied late August for 2 consecutive years; assessments made in December and March of both growing seasons and also in November during the second growing season

<926>
<926> CONT.
EFFECTS: Grass and broadleaf weeds reduced; no improvement in peach tree growth; no injury to peach trees
COMMENTS: November and December applications of praquat and diquat necessary second growing season to maintain commercially acceptable weed control
REFERENCE: Koffmann, W. and J. Kaldor, "Chemical Weed Control in Young Peach Trees," Aust. J. Exp. Agric. Anim. Husb. 15:566-569 (1975).

<927>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Pine, loblolly (PINUS TAEDA); Pine, slash (PINUS ELIOTTII); Plants
EXPERIMENTAL DOSE: 0.8, 1.1, 1.7, and 2.2 kg/ha
APPLICATION METHODS: Preemergence application; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; locations in 12 states (AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, and VA); evaluation time--varied, up to 132 days; sprinkler irrigation
EFFECTS: Moderate control of weeds with no adverse effects on pine seedlings
COMMENTS: Preemergence weed control in slash and loblolly pine seedbeds appears feasible; diphenamid and trifluralin not injurious to pine seedlings at twice rate needed for good control of grasses; sprinkler irrigation gave adequate incorporation of trifluralin for good early season grass control, but residual activity might have been increased by a more thorough soil incorporation; diphenamid exhibited a longer residual activity than trifluralin at all locations
REFERENCE: Dill, T.R. and M.C. Carter, "Preemergence Weed Control in Southeastern Forest Nurseries," Weed Sci. 21(4):363-366 (1973).

<928>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 0.75 lb/A
APPLICATION METHODS: Preplant spray with soil incorporation (3 in. depth) by rototilling; combined herbicides and types of applications studied; 4% EC
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7
EFFECTS: Effective control of pigweed and slight to moderate control of remaining weeds with slight damage to cucumbers and moderate damage to squash
COMMENTS: Control of crabgrass, pigweed, ragweed and lambsquarters in seeded cucumbers and squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence, and preemergence applications of chloramben methyl ester alone; in cucumbers only, bensulide preplant incorporated + chloramben methyl ester preemergence, bensulide preplant incorporated + dinoseb preemergence over activated charcoal, and nitralin preemergence gave excellent full-season weed control
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<929>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Grasses; Broadleaf weeds; Carpetgrass (AXONOPUS AFFINS)
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preplant spray with soil incorporation by rototilling; preemergence spray; postemergence spray; combined herbicides and types of application; 190 to 280 l./ha; 0.5% surfactants in postemergence sprays
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy loam or Cecil sandy clay loam; time period--1969 to 1971; evaluation time--3 to 9 weeks
EFFECTS: Effective control of grass weeds and slight control of broadleafs with very slight soybean damage in postemergence application; one cultivation improved broadleaf control to effective status and reduced sunflower damage
REFERENCE: Johnson, R.J., "Weed Control Systems for Sunflowers," Weed Sci. 20(3):261-264 (1972).

<930>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Pimpernel, common (ANAGALLIS ARVENSIS); Crunchweed (SINAPIS ARVENSIS); Pigweed (AMARANTHUS sp.); Bindweed, field (CONVOLVULUS ARVENSIS)
EXPERIMENTAL DOSE: 0.67 and 1.34 kg/ha
APPLICATION METHODS: Postemergence application; 200 l./ha; trifluralin and chlorthal-dimethyl incorporated by rototilling; all others not incorporated
EXPERIMENTAL CONDITIONS: Field study; plots sprayed twice a year over a 4-year period; sprinkler irrigation; greenhouse study; residues determined by mustard bioassay
EFFECTS: Effective control of AMARANTHUS and CONVOLVULUS; moderate control of A. COERULEA; slight control of S. ARVENSIS; little or no residual phytotoxicity
COMMENTS: Phytotoxicity to weeds in decreasing order: diuron, bromacil, simazine, trifluralin, prometryne, neburon, fluometuron, pyrazon, diphenamid, chlorthal-dimethyl; persistence of herbicides in decreasing order: diuron, bromacil, simazine, neburon, fluometuron, trifluralin, prometryne; control produced by pyrazon improved with the number of applications, but that of diphenamid and chlorthal-dimethyl remained weak and short
REFERENCE: Horowitz, M., T. Blumenfeld, G. Herzlinger, and N. Hulin, "Effects of Repeated Applications of Ten Herbicides on Weed Population, Residue Accumulation and Nitrification," Weed Res. 14(2):97-109 (1974).

<931>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 2.0, 4.0, 8.0, 16.0 and 32.0 ppm
APPLICATION METHODS: Soil incorporation; EC
EXPERIMENTAL CONDITIONS: Greenhouse study; soils of varied types (mixtures); evaluation time--1 mo; environmental chamber; sorghum coleoptile bioassay; in darkness at 30 C; evaluation time--48 hr
EFFECTS: Degree of growth reduction significantly correlated with organic matter but not clay content; increased activity occurred with increased clay content when organic matter content was low; lime content had no effect on activity; rate of trifluralin degradation was temperature dependent; trifluralin toxicity was greatest in dried, mixed soil
COMMENTS: Practical implication of greater persistence of trifluralin in aerated and dried soil is that soil disturbance, such as cultivation, carried out after pre-plant incorporated application, could extend effectiveness of treatment
REFERENCE: Horowitz, M., N. Hulin, and T. Blumenfeld, "Behavior and Persistence of Trifluralin in Soil," Weed Res. 14(4):213-220 (1974).

<932>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Soybean (GLYCINE MAX); Velvetleaf (ABUTILON THEOPHRASTI); Millet, foxtail (SETARIA ITALICA)
EXPERIMENTAL DOSE: 1X10(-5), 1X10(-6), and 1X10(-7)M
APPLICATION METHODS: Solution addition to sand (75 ml/pot in greenhouse study); solution addition to nutrient agar (laboratory study)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand culture in pots (cups); temperature--21 C (day) and 17 C (night); evaluation time--28 days; laboratory study; temperature--30 C in darkened incubator
EFFECTS: At 1X10(-5)M, reduced growth of all test plants
COMMENTS: Dinitramine most toxic to each species; dinitramine, trifluralin, and BAS-3921 H most inhibitory of soybean shoot growth, while oryzalin, dinitramine, and BAS-3921 H most inhibitory of root growth
REFERENCE: Harvey, R.G., "Relative Phytotoxicities of Dinitroaniline Herbicides," Weed Sci. 21(6):517-520 (1973).

<933>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--50% or greater inhibition in sorghum and oat but less than 50% in cucumber at 1 and 10 ppm; shoot--50% or greater inhibition in sorghum but less than 50% in oat at 1 ppm, 50% or greater in sorghum and oat at 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<934>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.75 and 1.5 lb/A
APPLICATION METHODS: Preplanting incorporated; application at 17.6 gpa in 1972 and 21 gpa in 1973
EXPERIMENTAL CONDITIONS: Memphis silt loam; field tests; herbicides used at suggested and twice the suggested rates; 2 year experiment; randomized complete block design with 4 replications; plots--eight 38-inch rows 30 ft long, 4 center rows harvested for soybean yield determination; entire area plowed before planting each year; dyanap added for broadweed weed control; plots also cultivated at timely intervals; cultivated checks, 9.1 Bu/A (1972), 16.0 Bu/A (1973)
EFFECTS: 1972--87% seedling and 39% rhizome control on June 13, 15% rhizome control on Nov. 11 at 0.75 lb/A, 85% seedling and 56% rhizome control on June 15, 45% rhizome control on Nov. 11 at 1.5 lb/A; 1973--60% seedling control on June 4, 67, 68, and 44% rhizome control on June 4, Aug. 14, and Nov. 2 respectively at 0.75 lb/A, 87% seedling control on June 4, 77, 89, and 79% rhizome control on June 4, Aug. 14, and Nov. 2 respectively at 1.5 lb/A; soybean yield--17.8 and 25.2 Bu/A in 1972 and 30.9 and 34.8 Bu/A in 1973 at respective rates
COMMENTS: No soybean injury reported
REFERENCE: Overton, J.R., J.A. Mullins, and L.S. Jeffery, "Control of Johnsongrass in Soybeans with Preplant Incorporated Herbicides," Tenn. Farm Home Sci. Prog. Rep. 90:5-7(1974).

<935>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Carrot (DAUCUS CAROTA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; seedbeed prepared April 25; 4 replications; weed control evaluated on August 2

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EFFECTS: Poor pigweed and foxtail control
COMMENTS: Herbicide combinations also tested; no injury rating for carrots; heavy rains delayed planting until May 2
REFERENCE: Noll, C.J., "Evaluation of Eight Herbicides Alone and in Combination for Weed Control in Carrots," Proc. Northeast. Weed Sci. Soc. 28:167-171 (1974).

<936>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Foxtail, giant (SETARIA FABERI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Carrot (DAUCUS CAROTA); Foxtail, yellow (SETARIA LUTESCENS)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed preparation the following April; single row plots 3 X 27 ft; 10 ft section of each plot harvested August 12; hand weeded control
EFFECTS: No carrot injury but poor weed control
COMMENTS: Trifluralin and dibutalin tested in combination with other herbicides
REFERENCE: Noll, C.J., "Weeding of Carrots Using Preplant Incorporation Herbicides Followed by Preemergence and/or Postemergence Herbicides," Proc. Northeast. Weed Sci. Soc. 29:244-246 (1975).

<937>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Panicum, Texas (PANICUM TEXANUM); Sida, spiny (SIDA SPINOSA); Cotton (GOSSYPIUM HIRSUTUM); Peanut (ARACHIS HYPOGAEA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.56, 1.12, and 1.68 kg/ha
APPLICATION METHODS: Preplanting incorporated; application by experimental-plot tractor-sprayer
EXPERIMENTAL CONDITIONS: Field study; randomized block design, 2.74 by 7.62 m plots with 3 replications; Vanoss loam soil--pH of 5.1, 1.2% organic matter; 3 crops and 2 weed species, crop rows 7.62 m long with 7.62 cm centers, weeds planted between crop rows; visual ratings after 16 days
EFFECTS: Panicum control--97, 100 and 100% at respective rates; prickly sida control--20, 33 and 63% at respective rates; cotton injury--0, 13, and 20% of crop at respective rates; peanut injury--0, 13, and 13% of crop at respective rates; soybean injury--0, 0, and 7% of crop at respective rates
COMMENTS: Comparison of 9 dinitroaniline compounds; cotton was least tolerant of increased dinitroaniline herbicide rates, soybeans the most tolerant; definable phytotoxicity variation as chemical structure changes
REFERENCE: Murray, D.S., P.W. Santelmann, and H.A.L. Greer, "Differential Phytotoxicity of Several Dinitroaniline Herbicides," Agron. J. 65:34-36 (1973).

<938>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.75 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: 4 soybean varieties; 2-year experiment (1967-1968); randomized split-plot design with 4 replications; varieties were main plots with herbicide treatments as subplots; cultivation as needed
EFFECTS: Seedling vigor--good both years but 1967 vigor significantly decreased from cultivated check; seed yield--no significant decrease from checks, 1967 yield slightly lower than 1968; plant lodging--no significant difference when compared to cultivated checks
COMMENTS: Below normal 1967 rainfall with 2.5 inches within 15 days after planting--slower seedling emergence and growth
REFERENCE: Johnson, B.J., "Soybean Varieties React Similarly to Herbicides," Ga. Agric. Res. 13(1):7-8 (1971).

<939>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Johnson grass (SORGHUM HALEPENSE); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Location 1--Loring silt loam, 13.5 X 25 ft plots, randomized complete block design with 3 replications, trifluralin served as check for johnsongrass control; location 2--Armour silt loam, 15 X 40 ft plots, randomized complete block design
EFFECTS: Location 1--90% seedling and 0% rhizome control; location 2--10% johnsongrass control on July 15 and Oct. 8
COMMENTS: No data on corn yield or injury
REFERENCE: Jeffery, L.S., J.T. Connell, and T.H. Morgan, Jr., "Johnsongrass Control in Corn Using Commercially-Available Herbicides," Tenn. Farm Home Sci. Prog. Rep. 93:38-40 (1975).

<940>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Broadleaf weeds; Grasses; Bean, pinto (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Preplant spray (incorporated, 3.5 in. depth) and preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--Tripp sandy loam and Bridgeport loam; two locations in Nebraska
EFFECTS: Moderate control of weeds with no adverse effect on bean; preplant application more effective than

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preemergence
COMMENTS: Weed control and field bean yields higher when EPTC, trifluralin, and alachlor incorporated than when applied 4 days after planting and rotary hoed; best results with alachlor resulted when applied preemergence; best control of black nightshade was with EPTC and alachlor or these herbicides in combinations with other herbicides
REFERENCE: Fenster, C.P. and G.A. Wicks, "Weed Control in Field Beans in Nebraska," Proc. N. Centr. Weed Contr. Conf. 26:50-52 (1971).

<941>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 0.56 kg/ha
APPLICATION METHODS: Preplanting incorporated applications in spray volumes of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: 25% weed control 25 days after treatment
COMMENTS: Hophornbeam copperleaf--southwestern weed prevalent in peanuts
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<942>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Oat, wild (AVENA FATUA); Foxtail, green (SETARIA VIRIDIS); Rapeseed (BRASSICA CAMPESTRIS); Rapeseed (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 0.84, 1.12, 1.4 and 1.68 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments applied in 202 l./ha water in 1971 and 1973 and in 102 l./ha in 1974
EXPERIMENTAL CONDITIONS: Field experiments--3 years; sandy loam soil in 1973 experiment, clay loam soil in 1971 and 1974 tests; plots--6.25 X 1.83 m with 8 rows spaced 22.9 cm apart; randomized complete block design with 4 replicates; control was an untreated check
EFFECTS: 1971--0.84 and 1.68 kg/ha gave moderate and good foxtail control, respectively and no visual effect on rapeseed or on rapeseed yield when compared to untreated control; 1973--1.4 kg/ha gave moderate foxtail and good wild oat control, rapeseed was completely tolerant with a significant increase in crop yield; 1974--1.12 and 1.4 kg/ha gave good foxtail and wild oat control with no increase in crop yield when compared to untreated check
COMMENTS: Rapeseed--oilseed crop; drought conditions and insects reduced 1974 crop yields; foxtail population very light in 1971
REFERENCE: Chow, P.N.P., "Dinitroaniline Herbicides for Grassy Weed Control in Rapeseed," Can. J. Plant Sci. 56:705-713 (1976).

<943>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preemergence sprinkle
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Miller Clay; flat culture
EFFECTS: Growth reduction
COMMENTS: Any of chemicals could cause deleterious effects on growth of seedling cotton; UC 21149 employed safely in combination with herbicides Dacthal, diuron, chloro-IPC, and trifluralin
REFERENCE: Boling, J. C. and J. Hacskaylo, "Effect of the Systemic Insecticide UC 21149 and Four Pre-Emergence Herbicides on Cotton Seedlings," J. Econ. Ent. 59(4):1026-1027 (1966).

<944>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Squash, summer (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.75 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence; postemergence application of BAS-3512 H only
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7; time period--1972
EFFECTS: Slight to moderate control of weeds and slight damage to crop plants
COMMENTS: Effective control of large crabgrass, redroot pigweed, common ragweed and lambsquarters in seeded cucumbers and summer squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence and preemergence applications of chloramben methyl ester alone
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<945>
<945>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Spinach (SPINACIA OLERACEA); Grasses; Purslane, common (PORTULACA OLERACEA); Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A; 4EC
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence applications
EXPERIMENTAL CONDITIONS: Field study; soil--Norfolk loamy sand; irrigation
EFFECTS: Effective control of all weeds and no adverse effect on lima beans with both application rates
COMMENTS: Acceptable weed control and yields obtained with trifluralin and profluralin; dinitramine significantly reduced stand, vigor, and yields of baby lima beans; alachlor provided acceptable weed control without yield reduction; combined herbicide applications just as effective
REFERENCE: Beste, C.E., "New Herbicides for Lima Beans," Proc. Northeast. Weed Sci. Soc. 29:194-196 (1975).

<946>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Broadleaf weeds; Grasses; Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Pretransplant incorporated and postemergence sprays 27 and 40 gal/A; all herbicides evaluated alone or in combination with metribuzin
EXPERIMENTAL CONDITIONS: Field study; soil--Aura sandy loam
EFFECTS: In pretransplanted application, slight to moderate control of weeds with slight vigor reduction of tomatoes
COMMENTS: Only U-27,267 performed at acceptable level of weed control when used alone; all pre-plant treatments followed by post-plant applications of metribuzin resulted in good weed control, one-half pound of metribuzin early post or late post was consistently the better treatment; none of post-plant metribuzin treatments resulted in significant injury to the tomatoes; all treatments resulted in increased tomato yield
REFERENCE: Grande, J.A. and T. Ombrello, "Weed Control in Transplanted Tomatoes with Metribuzin in Combination with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:219-224 (1975).

<947>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Plants; Potato (SOLANUM TUBEROSUM); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 0.75 lb/A; 4% EC
APPLICATION METHODS: Postemergence, preemergence, and preplant incorporated sprays; 38 gal/A; 20 psi; granular materials applied with cone-type applicator; varied combined treatments evaluated
EXPERIMENTAL CONDITIONS: Field study; three locations; rye cover crop after harvest
EFFECTS: Moderate control of weeds with no effect on crop plants
COMMENTS: Most treatments did not result in commercially acceptable control levels because of a number of conditions which reduced effectiveness of weed control in 1972
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<948>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Broom corn (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 ppm
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; soil-prepared with varying peat, sand, clay, lime, and loam content; plastic cup culture; temperature--15.7 to 37 C
EFFECTS: Severely reduced growth in leaf length at 4.0 ppm
COMMENTS: Phytotoxicity of benefin significantly correlated with organic matter content but not with clay or lime content of soils; after 1 month of incubation no significant activity remained from 2 ppm benefin, and after 2 months only slight activity remained from 4 ppm; benefin less persistent than trifluralin and more persistent than nitralin
REFERENCE: Horowitz, M. and T. Blumenfeld, "Behavior and Persistence in Soil of Benefin," Phytoparasitica 2(1):19-24 (1974).

<949>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Potato (SOLANUM TUBEROSUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 0.75 lb/A
APPLICATION METHODS: Preemergence and postemergence 4% EC spray applied at 20 psi pressure and 38 gal/A volume
EXPERIMENTAL CONDITIONS: April planting; plots--2 rows wide by 30 ft long; randomized complete block design; treatments replicated five times in experiments 1 and 3 and four times in others; total of 5 experiments; rye seeded following potato harvest
EFFECTS: Experiment 3--no phytotoxic effect on potato or rye crops, commercially unacceptable weed control
COMMENTS: Author notes that growing conditions (cool spring and high June rainfall) caused vigorous weed growth and retarded potato growth, thus reason for commercially unacceptable weed control; herbicide combinations also discussed
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<950>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Yam (DIOSCOREA sp.); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed (AMARANTHUS DUBIUS); Painted-leaf (EUPHORBIA HETEROPHYLLA); Junglerice (ECHINOCHLOA COLONUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 0.22, 0.67, and 2.02 kg/ha
APPLICATION METHODS: Preemergence and preplanting incorporated applications delivered in 340 l./ha of water
EXPERIMENTAL CONDITIONS: Heavy clay soil; randomized complete block design with 4 to 8 replications; spring or summer planting
EFFECTS: 0.22 and 0.67 kg/ha gave unsatisfactory weed control; 2.02 kg/ha controlled weeds 8 wk or more but caused crop damage
COMMENTS: No treatment controlled weeds entire first growing season; flaming before crop emergence reduced density of all weeds except nutsedge
REFERENCE: Gaskins, M.H. and H. Delpin, "Weed Control in New Plantings of Steroid-Producing DIOSCOREA Species," Weed Sci. 21(3):263-265 (1973).

<951>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Oat, wild (AVENA FATUA); Wheat (TRITICUM AESTIVUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 1.38 kg/ha
APPLICATION METHODS: Preemergence spray; 180 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and clay loam; nitrogen amendment at rates of 22.44, and 66 kg/ha; grass weeds seeded; broadleafs controlled with bromoxynil (0.6 kg/ha); time period--1971 to 1973;
EFFECTS: No adverse effect on wheat with moderate effect on yield of wild oats and effective yield reduction of foxtail.
COMMENTS: Good control of wild oats and green foxtail obtained with tank mixture of solution nitrogen containing trifluralin and triallate; tank mixtures of triallate with solution nitrogen controlled wild oats; trifluralin with solution nitrogen controlled wild oats and green foxtail; control of green foxtail and wild oats resulted in increased wheat yields, higher nitrogen content in wheat grain, and more efficient use of applied nitrogen fertilizer
REFERENCE: Moyer, J.R. and R.D. Dryden, "Effects of Combined Applications of Triallate or Trifluralin with Solution," Can. Plant Sci. 57:479-484 (1976).

<952>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preemergence spray; soil incorporated
EXPERIMENTAL CONDITIONS: Field study; soils--Bosket very fine sandy loam, Dundee silty clay loam, and Sharkey clay; time period--1964 to 1965 and 1970
EFFECTS: Reduced rhizome growth
COMMENTS: Incorporation of trifluralin in soil reduced rhizome production approximately 50% throughout soil profile but reduced rhizome production most in top 6 cm; more plants emerged from rhizomes when planted in sandy loam than in clay
REFERENCE: McWhorter, C.G., "Factors Affecting Johnsongrass Rhizome Production and Germination," Weed Sci. 20(1):41-45 (1972).

<953>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.56, 0.84, 1.12, 1.68, and 2.24 kg/ha
APPLICATION METHODS: Preplant incorporated; 187 l./ha; applied annually over a period of six years in fall or spring; dalapon applied postemergence; combined and sequential treatments also applied
EXPERIMENTAL CONDITIONS: Field study; soils--Sharkey clay, Bosket fine sandy loam; and Dundee silty clay loam; time period--1965 to 1970
EFFECTS: Effective control of johnsongrass after 2 annual treatments at 1.68 and 2.24 kg/ha and no adverse effect on soybean yield
COMMENTS: Effective johnsongrass control on Dundee silty clay loam followed treatments of nitralin or trifluralin, but 2 years or more of continuous treatment needed for acceptable control
REFERENCE: McWhorter, C.G., "Johnsongrass Control in Soybeans with Trifluralin and Nitralin," Weed Sci. 22(2):111-115 (1974).

<954>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.6 and 1.1 kg/ha
APPLICATION METHODS: Preplant incorporation; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Bosket sandy loam and Sharkey clay
EFFECTS: Moderate control of johnsongrass at 1.1 kg/ha with very slight initial injury to soybean but no adverse effect on yield
COMMENTS: On Bosket sandy loam soil, best average johnsongrass control over a 2-yr period obtained following profluralin and butralin; these treatments also resulted in highest average soybean yields
REFERENCE: McWhorter, C.G., "Johnsongrass Control in Soybeans with Soil-Incorporated Dinitroaniline Herbicides," Weed Sci. 25(3):264-267 (1977).

<955>
<955>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Grasses
EXPERIMENTAL DOSE: 0.75 and 1.00 lb/A
APPLICATION METHODS: Drag-off spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Slight to moderate control of broadleafs and quackgrass with effective control of annual grasses and no adverse effect on potato yield
COMMENTS: Metolachlor applied preemergence and penoxalin applied layby did not provide satisfactory control of broadleaved weeds; none of the drag-off treatments with dinitramine, USB-3153, or trifluralin controlled broadleaved weeds; USB-3153 and trifluralin applied at drag-off did not give satisfactory control of quackgrass
REFERENCE: Murphy, H.J. and T. Gajewski, "Effect of Several Herbicides Applied Preemergence, at Drag-Off and Layby on Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 31:176-179 (1977).

<956>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Treflan
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Nightshade, black (SOLANUM NIGRUM); Foxtail, green (SETARIA VIRIDIS); Nightshade, hairy (SOLANUM sp.); Kochia (KOCHIA SCOPARIA); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed (AMARANTHUS sp.); Purslane, common (PORTULACA OLERACEA); Sandbur (CENCHRUS ECHINATUS); Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Soil incorporation (preplant) with disks or cultivators to depth of 1.5-3.0 in.
EXPERIMENTAL CONDITIONS: Field study; all major soil types in CA, CO, ID, MT, WA and WY
EFFECTS: Poor control of black and hairy nightshades; moderate control of smartweed; no injury to dry beans
COMMENTS: COBEX showed definite potential as selective herbicide for dry and green beans when compared with several conventional herbicides
REFERENCE: Harris, G.K. and J.D. Stone, "COBEX - A New Herbicide for Beans," Proc. West. Soc. Weed Sci. 27:47 (1974).

<957>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 0.56 and 1.12 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: Poor to moderate control of broadleaf weeds in transplant and preplant applications; effective control of grasses; no tomato phytotoxicity
COMMENTS: Metribuzin, napropamide, and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<958>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS); Ladysthumb (POLYGONUM PERSICARIA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.6 and 1.1 kg/ha
APPLICATION METHODS: Preplant application; soil incorporation by mulch treader
EXPERIMENTAL CONDITIONS: Field study; soil--Plano silt loam; visual estimates of weeds; evaluation time--about 2 mos. (at harvest)
EFFECTS: Effective control of broadleaf and grass weeds at both rates but reduced pea yield at both application rates
COMMENTS: Of six herbicides evaluated, propachlor and a combination of dalapon and MCPB provided most effective control of annual weeds with least risk of pea crop injury
REFERENCE: Harvey, R.G., E.T. Gritton, and R.E. Doersch, "Effects of Selected Herbicides on Annual Weed Control and Production of Processing Peas," Agron. J. 64(1):812-815 (1972).

<959>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Iris, tall bearded (IRIS GERMANICA); Grasses; Lettuce, prickly (LACTUCA SCARIOLA); Iris, tall bearded (IRIS GERMANICA)
EXPERIMENTAL DOSE: 5.6, 11.2, and 22.4 kg/ha; 5% G
APPLICATION METHODS: Broadcast dry; mixed with calcined clay and applied at 1000 kg/ha; soil incorporated to 10-15 cm depth
EXPERIMENTAL CONDITIONS: Field Study; evaluation period--up to one yr
EFFECTS: Moderate control of pepperweed and effective control of other weeds with no adverse effect on iris rhizome growth at 11.2 kg/ha
COMMENTS: Fall-applied simazine and trifluralin satisfactorily controlled annual and biennial weeds in tall bearded iris; increased application rates improved control of semitolerant weeds
REFERENCE: Millbocker, D.C., "Chemical Weed Control in Tall Bearded Iris," Weed Sci. 21(63):258 (1973).

<960>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Soybean (GLYCINE MAX); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preplant spray; soil incorporation by rototilling (5 cm); postemergence spray; 188-282 l/ha; 0.5% surfactant; lay by and directed sprays; varied combinations of herbicides and methods of application
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy loam and Cecil sandy clay loam; evaluation time--3, 5, 7 or 8, and 11 wks; time period--1968 to 1970
EFFECTS: Effective control of grass weeds and slight-moderate control of broadleaf weeds with slight-moderate damage to soybeans in one of three trials in preplant application
COMMENTS: When chloroxuron applied in sequence with split application of either linuron or prometryne, control of broadleaf weeds comparable to that obtained when preplant treatments applied in sequence with these postemergence treatments in 1969 and 1970; control of grasses by these postemergence treatments less effective than single preplant treatments
REFERENCE: Johnson, B.J., "Effects of Sequential Herbicide Treatments on Weeds and Soybeans," Weed Sci. 19(6):695-700 (1971).

<961>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Cudweed, low (GNAPHALIUM ULIGONOSA); Broccoli (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Cabbage (BRASSICA OLERACEA); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 1.7 kg/ha
APPLICATION METHODS: Preplant spray with soil incorporation by disking
EXPERIMENTAL CONDITIONS: Field study; 5 year period
EFFECTS: Moderate control of weeds with reduced yield of brussels sprouts and cabbage in one of five years
COMMENTS: Trifluralin, DCPA, and nitrofen gave erratic weed control and must be applied at highest rates of application permitted by label for even average weed control in most years; two new herbicides pryanchlor and DMC 3950 show promise for use on cole crops in Eastern Canada
REFERENCE: Ivany, J.A. and J.A. Cutcliffe, "Herbicides for Cole Crops in Eastern Canada," Proc. Northeast. Weed Sci. Soc. 27:194-198 (1973).

<962>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Pea, sweet (PISUM SATIVUM); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Mustard, wild (BRASSICA KABER); Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.84 and 1.68 kg/ha
APPLICATION METHODS: Solution addition to pea seed (germination); field spray 187 l/ha at 183 kg/sq cm; soil incorporation preplant
EXPERIMENTAL CONDITIONS: Greenhouse study--plastic cup culture (germination); silica sand; 21 C (day) and 17 C (night), evaluation time-21 days; field study; soil--Plano silt loam, pH-6.3, evaluation times--21 days and at harvest
EFFECTS: Reduced yield of pea at high rate but effective control of weeds; reduced emergence and shoot dry weight of pea in solution culture (germination) study
COMMENTS: Field trials conducted over 3-yr period demonstrated that all eight herbicides successfully controlled weeds; use of trifluralin resulted in lowest shelled pea yields; significant reductions in yield occurred from trifluralin in 1973 and 1975 when compared with the untreated checks
REFERENCE: Harvey, R.G. and G.L. Jacques, "Dinitroaniline Herbicides for Weed Control in Peas," Weed Sci. 25(3):256-259 (1977).

<963>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Alfalfa (MEDICAGO SATIVA); Cabbage (BRASSICA OLERACEA); Lettuce (LACTUCA SATIVA); Beet, sugar (BETA VULGARIS); Soybean (GLYCINE MAX); Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.9 kg/ha
APPLICATION METHODS: Soil incorporation; disking to 15 cm depth
EXPERIMENTAL CONDITIONS: Field study; herbicides applied at six-month intervals at two locations; soils--Mesa and Yuma, AZ; crops planted at 24, 18, 12, 6, and 0 intervals after herbicide applications; residual effects studied after fallow periods
EFFECTS: Persisted for up to 24 mos and adversely affected stand or fresh weight yield of sugar beets and sorghum; alfalfa adversely affected (stand) when planted immediately after application (0 mos); cabbage, lettuce, and soybean unaffected at any time
COMMENTS: Herbicides can persist for 2 years or more in fallow desert soils and affect susceptible crops; considerable differences observed with two soil types; considerable differences in crop susceptibility
REFERENCE: Hamilton, K.C. and H.P. Arle, "Persistence of Herbicides in Fallow Desert Cropland," Weed Sci. 20(6):573-576 (1972).

<964>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Millet, foxtail (SETARIA ITALICA)
EXPERIMENTAL DOSE: 0.01, 0.1, 0.5, 1.0, 2.0, and 10.0 ppm
APPLICATION METHODS: Addition to Hoagland's nutrient solution; EC; addition to sand culture with soil constituents as variables
EXPERIMENTAL CONDITIONS: Greenhouse study; simulated soils

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<964> CONT.
EFFECTS: 50% growth reduction at 0.23 ppm trifluralin with no effect of pH at 5.5, 6.8, and 7.4; of added soil constituents, organic matter reduced trifluralin phytoxicity most compared to clays studied; steaming of organic matter more than doubled the anion exchange capacity
COMMENTS: Trifluralin did not follow many of generally accepted rules for adsorption in soils; a number of soil variables studied and discussed
REFERENCE: Hollist, R.L. and C.L. Foy, "Trifluralin Interactions with Soil Constituents," Weed Sci. 19(1):11-16 (1971).

<965>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Bluegrass, annual (POA ANNUA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preplant solution soak
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Puyallup fine sandy loam; pH--5.8; temperature--approx 60 F
EFFECTS: Moderate control of bluegrass with no adverse effect on bentgrass
COMMENTS: Dacthal, betasan, dipropalin, trifluralin, and enide significantly controlled annual bluegrass for periods of 9 to 12 weeks; dacthal and betasan completely nonphytotoxic to mature turf
REFERENCE: Goss, R.L., "Preemergence Control of Annual Bluegrass (POA ANNUA L.)," J. Agron. 56(1):479-481 (1964).

<966>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Grasses; Broadleaf weeds; Lupine, narrow-leaf (LUPINUS ANGUSTIFOLIUS)
EXPERIMENTAL DOSE: 0.5 and 1.1 kg/ha
APPLICATION METHODS: Preemergence spray; soil incorporated prior to seeding; 40% EC; 100-200 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--7 types; 18 locations in western Australia; time period--1972 to 1974
EFFECTS: No adverse effect on lupin at 3 southern sites with slight-moderate control of annual grass weeds and very slight control of broadleafs at one site
COMMENTS: Significant yield increases obtained on at least one occasion with alachlor, diuron, linuron, simazine, and trifluralin; diuron, linuron, and simazine each resulted in significant lupin yield reduction on one occasion
REFERENCE: Allen, J.M., "2. The Response of Narrow-Leafed Lupins to Preemergence Herbicides," Aust. J. Exp. Agric. Anim. Husb. 17(84):118-125 (1977).

<967>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Willow (SALIX sp.); Grape (VITIS VINIFERA); Eucalyptus, red gum (EUCALYPTUS CAMALDULENSIS)
EXPERIMENTAL DOSE: 10 to 100 mg/l. and 1000 mg/l.
APPLICATION METHODS: Exposed plant root placed in 1.0 liter herbicide solution for 1 hr; EC formulation
EXPERIMENTAL CONDITIONS: Pot studies; plastic pot (holes in bottom) with plant placed on top of another pot containing soil; after root growth through holes into second pot, plants carefully removed and placed on top of pot containing herbicide solution; 1-hr herbicide exposure
EFFECTS: Willow--roots killed at 10 to 100 mg/l., foliage injury noted at 1000 mg/l.; grape--1000 mg/l. killed roots without foliage injury; eucalyptus--root kill variable and incomplete
REFERENCE: Ahrens, J.F., O.A. Leonard, and N.R. Townley, "Chemical Control of Tree Roots in Sewer Lines," J. Water Pollut. Control Fed. 42(9):1643-1655 (1970).

<968>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Millet, German (SETARIA ITALICA)
EXPERIMENTAL DOSE: 0.25 to 4.0 kg/ha
APPLICATION METHODS: Preplanting incorporated in 350 l./ha water
EXPERIMENTAL CONDITIONS: Field studies; ten soil types--sand, clay loams, silt loams, sandy loam, clay and peat; 3 year period, 43 field trials; bioassay tests in glasshouse with soybeans grown in soils from field tests
EFFECTS: Doses up to 1 kg/ha did not persist; 2 kg/ha showed residual activity in 74% of trials; 4 kg/ha killed German-millet in all instances
COMMENTS: Persistence affected by soil organic matter content but not by rainfall; conclusion--recommended rates may persist more than one growing season and harm susceptible crops in many situations in New Zealand
REFERENCE: Rahman, A., "Persistence of Terbacil and Trifluralin Under Different Soil and Climatic Conditions," Weed Res. 17:145-152 (1977).

<969>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Drench treatments as emulsifiable concentrate
EXPERIMENTAL CONDITIONS: Seedlings germinated in dark in vermiculite and in 20 mg/l. solution of streptomycin sulfate at 30 C; seedlings harvested after 4 days for chromatin-extraction; excess herbicide removed 5 min. after drenching
EFFECTS: 10(-5)M application to etiolated corn 6 or 12 hr before root isolation of chromatin markedly reduced RNA synthesis; trifluralin increased melting temperature of corn chromatin; no inhibition of soybean

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chromatin activity
COMMENTS: Inhibited corn RNA synthesis indicates possible herbicide binding to chromatin--subsequent reduction of template availability for transcription; lack of soybean RNA inhibition--possibly due to less uptake, greater herbicide metabolism or both; chromatin extraction method described
REFERENCE: Penner, D. and R.W. Early, "Action of Trifluralin on Chromatin Activity in Corn and Soybean," Weed Sci. 10(4):364-366 (1972).

<970>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Field study, 3 years; 3 by 6 m plots; Mattapeake soil; randomized complete block design with 4 replications
EFFECTS: Very minor initial soybean injury, no injury at later dates; good foxtail and poor ragweed control; no nutsedge control
REFERENCE: Parochetti, J.V., R.W. Feeny, and S.R. Colby, "Preemergence Herbicides plus Postemergence Chloroxuron on Soybeans," Weed Sci. 20(6):548-553 (1972).

<971>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Soybean (GLYCINE MAX); Jimsonweed (DATURA STRAMONIUM)
EXPERIMENTAL DOSE: 0.75 lb/A
APPLICATION METHODS: Preplanting incorporated treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies; Mattapex silt loam; 10 by 20 ft plots, 4 rows of soybeans, 4 replications; spring planting
EFFECTS: Very minor soybean injury on June 11, none on June 25; poor jimsonweed control
COMMENTS: Combinations of herbicides also tested
REFERENCE: Parochetti, J.V., "Control of Jimsonweed and Three Broadleaved Weeds in Soybeans with Herbicides," Proc. Northeast. Weed Sci. 29:19-25 (1975).

<972>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 0.75 and 1.5 lb/A
APPLICATION METHODS: Preplanting incorporated treatment at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: No soybean injury at 0.75 lb/A, 1.5 lb/A gave unsatisfactory vigor reduction, minor stand reduction, and necrosis; excellent foxtail control, good nutsedge control at 1.5 lb/A but only fair at 0.75 lb/A
COMMENTS: Herbicide combinations also tested
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<973>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.75 and 1.5 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Poor sesame tolerance and erratic barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<974>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Grasses; Broadleaf weeds; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.75 and 1.00 lb/A
APPLICATION METHODS: Preplant incorporated spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 10 locations in Iowa
EFFECTS: At 1.0 lb/A, effective control of grasses and moderate control of broadleaf weeds with slight growth reduction of soybean
COMMENTS: Preplant incorporated herbicides trifluralin, dinitramine, profluralin, alachlor, and vernolate effectively reduced grassy weed populations; tank mix addition of metribuzin and bifenox broadened the spectrum of weeds controlled; overlay treatments of metribuzin were also equally effective in broadening the spectrum of weed control; preemergence treatments provided excellent examples of grass and broadleaf weed control in soybeans
REFERENCE: Jennings, V.M., "Soybean Herbicide Evaluations Across Iowa in 1974," Proc. North Cent. Weed Control Conf. 29:79-83 (1974).

<975>
<975>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Plants; Croton, gold dust (CODIAEUM VARIEGATUM)
EXPERIMENTAL DOSE: 1, 2, 4, and 8X recommended rate (4 lb/A); EC
APPLICATION METHODS: Herbicide-impregnated mulches (0.75 in. over soil surface)
EXPERIMENTAL CONDITIONS: Field study; pot culture; lath shade; overhead sprinkle irrigation; evaluation time--up to 28 wk
EFFECTS: At 2X rate, effective weed control with no adverse effect on CODIAEUM after 28 wk
COMMENTS: No crop phytotoxicity observed from any treatment; weed control initially good with each herbicide except dacthal when soil incorporated; after 8 weeks, weeds noted in 1 and 2x rates of both simazine and treflan soil incorporation treatments; after 28 weeks excessive weed growth found in every soil-incorporation treatment except lasso and treflan
REFERENCE: Neel, P.L., "Weed Control in Containers With Herbicide-Impregnated Mulch Materials," Proc. Fla. State Hort. Soc. 85:409-413 (1973).

<976>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Soybean (GLYCINE MAX); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Morningglory (IPOMOEA sp.); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.6 kg/ha
APPLICATION METHODS: Preemergence and pre-plant incorporated; types of applications not specifically stated for varied studies
EXPERIMENTAL CONDITIONS: Field studies
EFFECTS: Moderate weed control with no adverse effect on soybean
COMMENTS: As preplant incorporated application, excellent weed control obtained in cotton, soybeans, peanuts and other crops; AC-92,553 also applied pre-emergence; with this method, controlled most grasses and certain broadleaved weeds in maize, wheat, and rice
REFERENCE: Sprankle, P.L., "AC-92,553, Selective Herbicide for Weed Control in Cereals and Other Crops," Proc. 12th British Weed Cont. Conf. 2:825-830 (1974).

<977>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 micro M to 1.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplast and mung bean hypocotyl assays; evaluation time--up to 3 hr
EFFECTS: Strong inhibition of one or more cyclic or noncyclic photophosphorylation reactions, mitochondrial oxidation of varied substrates, and ATPase activity
COMMENTS: 2,6-dinitroanilines inhibited both electron transport and phosphorylation in isolated chloroplasts and mitochondria; interference with photoproduction of ATP chloroplasts evidenced by increased sensitivity of photophosphorylation over the coupled photoreduction to the 2,6-dinitroanilines when water served as electron donor, and by inhibition of photophosphorylation mediated by PMS in an argon atmosphere
REFERENCE: Moreland, D.E., F.S. Farmer, and G.G. Hussey, "Inhibition of Photosynthesis and Respiration by Substituted 2,6-Dinitroaniline Herbicides," Pest. Biochem. & Phys. 1:342-353 (1971).

<978>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Pepper, hot (CAPSICUM ANNUUM); Santa Maria (PARTHENIUM HYSTEROPHORUS); Nutsedge, purple (CYPERUS ROTUNDUS); (CLEOME CILIATA); (BOERHAVIA DIFFUSA); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); Pinkroot (SPIGELIA ANTHELMIA); Junglerice (ECHINOCHLOA COLONUM); Wiregrass (ELEUSINE INDICA); Sandbur (CENCHRUS ECHINATUS)
EXPERIMENTAL DOSE: 0.75 kg/ha
APPLICATION METHODS: Preplanting incorporated treatment
EXPERIMENTAL CONDITIONS: Seed bed trial; application 3 days before sowing
EFFECTS: Treatment not considered satisfactory
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<979>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Plants; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.8 and 1.6 kg/ha
APPLICATION METHODS: Preemergence spray; 1000 l./ha; incorporated by raking (trifluralin) or sprinkler irrigation
EXPERIMENTAL CONDITIONS: Field study; time period--1973 and 1974; Lebanon
EFFECTS: Moderate weed control and reduced potato yield
COMMENTS: Weedy check plots caused reduction of 58% of potato tuber yield as compared to all season weed-free conditions; all herbicides tested reduced oven dry weight of weeds by 55-92% as compared to unweeded control plots; only napropamide and fluchloralin gave significantly higher potato tuber yields
REFERENCE: Saghir, A.R. and G. Markoullis, "Effects of Weed Competition and Herbicides on Yield and Quality of Potatoes," Proc. 12th. Br. Weed Cont. Conf. 2:533-539 (1974).

<980>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.38 and 0.75 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, or postemergence sprays; 80 gal/A at 40 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; soil--Caribon gravelly silt loam
EFFECTS: Slight to moderate weed control with no adverse effect on potato in preplant incorporated application
COMMENTS: Oryzalin, oryzalin plus metribuzin, and RE 17111 did acceptable job of controlling mustard, lambsquarters, bindweed, ladysthumb, and chickweed; in one test, trifluralin, EPTC, EL-161, oryzalin, or metribuzin did not control quackgrass
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in Potatoes With Several Pre-Plant Incorporated, Preemergence, and Early Post Emergence Herbicides," Proc. N.E. Weed Sci. Soc. 30:235-238 (1976).

<981>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Goosegrass (ELEUSINE INDICA); Love-grass (ERAGROSTIS PECTINICEA); Nutsedge, purple (CYPERUS ROTUNDUS); Pigweed, spiny (AMARANTHUS SPINOSUS); Apple of Peru (NICANDRA PHYSOLODES); Purslane, common (PORTULACA OLERACEA); Floras paintbrush (EMILIA SONCHIFOLIA); Spurge, garden (EUPHORBIA HIRTA); Cabbage (BRASSICA OLERACEA); Cabbage, Chinese (BRASSICA PEKINENSIS); Mustard (BRASSICA CAMPESTRIS); Mustard, cabbage (BRASSICA CHINENSIS); Radish (RAPHANUS SATIVUS); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; evaluation time--3 and 7 wk; sprinkler irrigation
EFFECTS: Effective control of weeds except goosegrass and lovegrass (moderate control) with little or no adverse effect on crop plants except cauliflower (severe injury)
COMMENTS: Vegadex and treflan found suitable herbicides while dymid very toxic to crop; selectivity not due to single factor but interaction of morphological, physiological, and genetical factors which made particular crop tolerant or susceptible
REFERENCE: Vahidy, A.A., "Differential Tolerance within Certain Cruciferous Crops to Vegadex, CIPC, Dymid and Treflan," Pak. J. Bot. 5(1):79-85 (1973).

<982>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Pea, sweet (PISUM SATIVUM); Cucumber (CUCUMIS SATIVUS); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Wheat (TRITICUM AESTIVUM); Oat (AVENA SATIVA); Barley (HORDEUM VULGARE); Rice (ORYZA SATIVA); Corn (ZEA MAYS); Sorghum (SORGHUM BICOLOR); Millet, foxtail (SETARIA ITALICA); Foxtail, giant (SETARIA FABERI); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 0.02 to 16 ppm; 1.12 kg/ha
APPLICATION METHODS: Mixed in sand for seed germination and preplanting evaluations (greenhouse); soil incorporated by rototilling (field)
EXPERIMENTAL CONDITIONS: Laboratory study; petri plate; sand culture; greenhouse study; vapor toxicity study; field study
EFFECTS: More toxic to shoots than nitralin
COMMENTS: Nitralin did not prevent emergence of any species; trifluralin was more toxic than nitralin to the shoots of sorghum and cucumber via shoot exposure; nitralin more toxic than trifluralin to roots via root exposure; comparison of phytoxicity through vapor activity showed trifluralin much more toxic than nitralin
REFERENCE: Barrentine, W.L. and G.F. Warren, "Differential Phytotoxicity of Trifluralin and Nitralin," Weed Sci. 19(1):31-37 (1971).

<983>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Flat culture
EFFECTS: Reduced numbers or growth of rhizomes and tillers
COMMENTS: Kentucky bluegrass plants showed reduction of rhizome number and length and number of tillers; zytron, dacthal, and trifluralin produced greatest reduction; bandane and chlordane reduced rhizome development; crab-e-rad reduced number of tillers and length of rhizomes
REFERENCE: Gaskin, T.A., "Effect of Pre-Emergence Crabgrass Herbicides on Rhizome Development in Kentucky Bluegrass," J. Agron. 56(1):340-342 (1964).

<984>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Millet, foxtail (SETARIA ITALICA); Foxtail, green (SETARIA VIRIDIS); Foxtail, yellow (SETARIA GLAUCA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Grasses; Broadleaf weeds; Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI); Foxtail, giant (SETARIA FABERI); Soybean (GLYCINE MAX); Lamb's-quarters (CHENOPODIUM ALBUM); Purslane, common (PORTULACA OLERACEA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Venice mallow (HIBISCUS TRIONUM)
EXPERIMENTAL DOSE: 0.5 to 3.0 lb/A
APPLICATION METHODS: Preplant incorporated spray; 10 to 30 gal/A at 20 to 30 psi
EXPERIMENTAL CONDITIONS: Field study; locations in 6 states (MI, MO, NE, IL, IA, and OH)
EFFECTS: At 0.75 and 1.0 lb/A; effective control of millet, yellow foxtail, and lambsquarters with moderate control of remaining weeds and occasional slight damage of soybean

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COMMENTS: CGA-10832 gave good control of prevalent weed species throughout growing season; CGA-11607 and CGA-14397 gave inferior weed control compared to CGA-10832; weed control from trifluralin comparable at equivalent rates to CGA-10832, with no significant differences indicated
REFERENCE: LeBaron, H.M., R.R. Wilson, and T.D. Taylor, "Evaluation of CGA-10832 and Other Herbicides for Soybeans in the North Central States," Proc. N. Cent. Weed Contr. Conf. 26:44-48 (1971).

<985>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Bluegrass, annual (POA ANNUA); Bluegrass, Kentucky (POA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Fescue, creeping red (FESTUCA RUBRA); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study--emergence of seedlings (germination) studied in flat culture; evaluation time--seed planted up to 93 days after herbicide application
EFFECTS: Reduced germination of all species
COMMENTS: With few exceptions, herbicides retarded stand and vigor of turfgrasses seeded in turf killed with methyl bromide; chlordane was least and commercial arsenic complex plus 7% N most toxic to young seedlings; seedlings of Merion Kentucky bluegrass most resistent to herbicide injury; no appreciable decrease in original turf density noted except for arsenic complex material which severely injured bluegrass turf
REFERENCE: Juska, F.V. and A.A. Hanson, "Effect of Preemergence Crabgrass Herbicides on Seedling Emergence of Turfgrass Species," Weeds 12(2):97-101 (1964).

<986>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Crabgrass, hairy (DIGITARIA SANGUINALIS); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 0.75 lb/A
APPLICATION METHODS: Preemergence; postemergence, and preplant incorporated sprays; 18 gal/A at 30 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam
EFFECTS: Preplant incorporated--moderate weed control with no adverse effect on cabbage
COMMENTS: None of the herbicides used unacceptably phytotoxic, but alachlor resulted in slight temporary stunting; alachlor most effective herbicide on total weed spectrum and HOE 23408 most effective for control of annual grasses
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicide Trial for Direct Seeded Fall Cabbage on Long Island," Proc. NE Weed Sci. Soc. 30:197-199 (1976).

<987>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 2.0 lb/A; G
APPLICATION METHODS: Preemergence broadcast spreader (G) and spray (WP); 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; established turf with seeding of crabgrass prior to herbicide applications
EFFECTS: Effective control of crabgrass and moderate control of goosegrass with moderate bluegrass thinning but no effect on bentgrass
COMMENTS: A-820, CGA-10832, and RP-17623 experimental herbicides useful new preemergence herbicides in comparison with commercially available herbicides; two new aniline herbicides have some advantages
REFERENCE: Engel, R.E., C.W. Bussey, and R.D. Ilnicki, "Control of Crabgrass DIGITARIA Species and Goosegrass ELEUSINE INDICA in Turf with Experimental Preemergence Herbicides," Proc. Northeast. Weed Soc. 27:324-330 (1973).

<988>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Plants; Bean, snap (PHASEOLUS VULGARIS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 0.5 and 3.0 lb/A
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Moderate control of weeds with unspecified adverse effect on crop plants
COMMENTS: Profluralin safest on snapbeans and fluchloralin safest on lima beans of herbicides evaluated
REFERENCE: Ilnicki, R.D., D.J. Herman, and J. Somody, "Effects of Some Preplant Incorporated Herbicides on Weed Control in Snapbeans and Lima Beans," Proc. Northeast. Weed Sci. Soc. 29:197-198 (1975).

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CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Broadleaf weeds; Grasses; Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.00 and 1.12 kg/ha
APPLICATION METHODS: Preplant, preplant incorporated (6-7.5 cm depth), preemergence, and postemergence sprays; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: Moderate control of all weeds with no adverse effect on tomato yield in preplant incorporation application
COMMENTS: In direct-seeded tomatoes, FMC 25213 showed promise for providing broad spectrum weed control; CGA

<989> CONT.
24705 and Hoe 23408 found selective for annual grasses; with transplanted tomatoes, oxidiazon preplant and Hercules 26905 preplant incorporated provided effective weed control in addition to compounds mentioned for seeded crop
REFERENCE: Henne, R.C., "New Compounds with Potential for Weed Control in Tomatoes," Proc. Northeast. Weed Sci. Soc. 31:207-214 (1977).

<990>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Soybean (GLYCINE MAX); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Carpetweed (MOLLUGO VERTICILLATA); Chamomile, corn (ANTHEMIS ARVENSIS); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.50, 0.75, and 1.0 lb/A
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold sandy loam
EFFECTS: Effective control of pigweed and carpetweed, moderate control of chamomile and panicum, and slight control of shepherd's purse with vigor reduction of soybean
COMMENTS: Most effective dinitroaniline herbicide was dinitroaniline which gave moderate to effective control of all weeds with no adverse effect on soybeans; vigor reduction by some herbicides did not affect yield
REFERENCE: Ilnicki, R.D., D.J. Herman and J. Somody, "The Response of Soybeans to Some Dinitroaniline Herbicides," Proc. Northeast. Weed Sci. Soc. 29:17-18 (1975).

<991>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Broadleaf weeds; Grasses; Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: 1.12 and 1.65 kg/ha
APPLICATION METHODS: Preplant incorporated (7 cm depth); preemergence and postemergence sprays; 308 l./ha; combined treatments
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: In preplant application; moderate control of all weeds with little or no damage to carrot
COMMENTS: Combination treatment consisting of trifluralin preplant incorporated followed by a postemergence application of linuron provided season long weed control; carrots tolerated postemergence applications of Hoe 23408 which selectively controlled annual grass weeds; combination of Hoe 23408 plus linuron resulted in more rapid weed kill than with either material alone
REFERENCE: Henne, R.C., "Chemical Weed Control in Carrots," Proc. Northeast Weed Sci. Soc. 31:238-243 (1977).

<992>
CHEMICAL NAME: Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Trifluralin
PLANT: Soybean (GLYCINE MAX); Panicum, fall (PANICUM DICHOTOMIFLORUM); Lamb's-quarters (CHENOPODIUM ALBUM); Galinsoga (GALINSOGA CILIATA); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 0.5 lb/A; 4% EC
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bucks silt loam
EFFECTS: Effective control of all weeds with slight injury to soybeans that did not affect yield
COMMENTS: RH-2512 preemergence provided excellent control of large crabgrass, fall panicum, common lambsquarter, redroot pigweed, and smallflower galinsoga; RH-2915 preemergence provided weed control equivalent to RH--2512
REFERENCE: Hartnett, J.P., "Weed Control in Soybeans with RH-2512 and RH-2915," Proc. Northeast. Weed Sci. Soc. 29:4-8 (1975).

<993>
CHEMICAL NAME: Benzenamine, 3,4-dimethyl-N-(1-methylpropyl)-2,6-dinitro
CHEMICAL COMMON NAME: AC 92390
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Bluegrass, annual (POA ANNUA); Parsley-piert (ALCHEMILLA MICROCORPA); Speedwell, corn (VERONICA ARVENSIS); Clover, hop (TRIFOLIUM AGARIUM); Bermudagrass, common (CYNODON DACTYLON); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 2.2 and 3.4 kg/ha
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: 3-year test on golf courses, 1-year test at Georgia Experiment Station; loam, sandy clay loam, and sandy loam soils; DCPA, benefin, terbutol, bensulide used as summer chemical checks, pronamide, DCPA, and terbutol used as winter chemical checks; 1.5 by 3.0 m plots, randomized complete block design with 4 replications; summer tests--crabgrass control in turfgrass; winter tests--control of annual bluegrass, parsley-piert, corn speedwell and hop clover; visual ratings
EFFECTS: 51% average crabgrass control for 8 tests at 2.2 kg/ha (15-84% range); no significant effect on Kentucky bluegrass or bermudagrass; annual bluegrass control--2 years, 61 and 98% at 3.4 kg/ha; parsley-piert control--2 years, 0 and 71% at 3.4 kg/ha; corn speedwell--100% both years at 3.4 kg/ha; hop clover control--2 years, 10 and 80% at 3.4 kg/ha
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<994>
CHEMICAL NAME: Benzenamine, 3,4-dimethyl-N-(1-methylpropyl)-2,6-dinitro
CHEMICAL COMMON NAME: AC 92390
PLANT: Pigweed (AMARANTHUS sp.); Purslane, common (PORTULACA OLERACEA); Santa Maria (PARTHENIUM HYSTEROPHORUS); (PHYLLANTHUS AMARUS); Wiregrass (ELEUSINE INDICA); Junglerice (ECHINOCHLOA COLONUM); Crabgrass (DIGITARIA INSULARIS); Nutsedge, purple (CYPERUS ROTUNDUS); Corn (ZEA MAYS); Groundnut (PANAX TRIFOLIUM); Soybean (GLYCINE MAX); Cabbage (BRASSICA OLERACEA); Cotton (GOSSYPIUM HIRSUTUM); Cucumber (CUCUMIS SATIVUS); Onion (ALLIUM CEPA); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM)

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<994> CONT.
EXPERIMENTAL DOSE: 1.5 and 3.0 kg/ha
APPLICATION METHODS: Preemergence and preplanting treatment
EXPERIMENTAL CONDITIONS: Loam soil; non-field experiments
EFFECTS: Preplanting 1.5 and 3.0 kg/ha--maize, groundnut, and soybean safe, cabbage, cotton, cucumber, onion, snapbean, and tomato unsafe, weed control good; preemergence 1.5 kg/ha--maize, groundnut, soybean, cotton, and snapbean safe, cabbage, cucumber, onion, and tomato, unsafe, weed control good; preemergence 3.0 kg/ha--groundnut and soybean safe, cabbage, cucumber, onion, tomato, snapbean, and cotton unsafe, very good weed control
COMMENTS: Promising herbicides from these studies tested in field
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<995>
CHEMICAL NAME: Benzenamine, 3,4-dimethyl-N-(1-methylpropyl)-2,6-dinitro
CHEMICAL COMMON NAME: AC 92390
PLANT: Corn (ZEA MAYS); Nutsedge, purple (CYPERUS ROTUNDUS); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); (PANICUM ZIZANOIDES); Morningglory (IPOMOEA sp.); Bermudagrass, common (CYNODON DACTYLON); (KALLSTROEMIA MAXIMA); (SORGHUM VERTICILLIFLORUM)
EXPERIMENTAL DOSE: 3 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Clay loam soil; field tests
EFFECTS: 86% corn yield compared to clean-weeded control; moderate overall weed control--grasses poorly controlled
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<996>
CHEMICAL NAME: Benzenamine, 3,4-dimethyl-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: AC 92390
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 1.50 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Poor control of galinsoga and moderate control of pigweed in preplanting application; little effect on beans
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.P. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<997>
CHEMICAL NAME: Benzenamine, 3,4-dimethyl-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: AC 92390
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: Fall application in 28 gpa solution
EXPERIMENTAL CONDITIONS: Herbicides incorporated to depth of 5 to 6 inches; plots--4 x 20 ft with 3 replications; nutsedge counts made monthly in 3 random 1-ft square areas per plot; 4 months after treatment, plots tilled 5 inches deep and nutsedge counts made 1 month later; field studies
EFFECTS: No significant yellow nutsedge control 1 month after application
REFERENCE: Locascio, S.J. and W.L. Currey, "Yellow Nutsedge (CYPERUS ESCULENTUS) control and Vegetable Crop Tolerance with Various Herbicides," Proc. South. Weed Sci. Soc. 26:259-266 (1973).

<998>
CHEMICAL NAME: Benzenamine, 3,4-dimethyl-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: AC 92390
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 0.75 and 1.5 lb/A
APPLICATION METHODS: Preplanting incorporated at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: Minor stand reduction at low rate, slight increase in stand at high rate; excellent weed control
COMMENTS: Herbicide combinations also tested
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<999>
CHEMICAL NAME: Benzenamine, 3,4-dimethyl-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: AC-92390
PLANT: Crabgrass (DIGITARIA ISCHAEMUM); Bluegrass, Kentucky (POA PRATENSIS); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 4.48 kg/ha; 2.5% G
APPLICATION METHODS: Preemergence spray (40 psi and 50 gal/A) and granule broadcast
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; evaluation time--up to 5 mo
EFFECTS: Effective crabgrass control with very slight to no damage of turfgrasses
COMMENTS: Best control of crabgrass in both turf species obtained by DCPA, butralin, AC-92390, and prosulfalin; all rates of granular HOE-22870 provided good crabgrass control in red fescue; in bluegrass, HOE-22870 controlled crabgrass only at the high rate or when the low rate was reapplied
REFERENCE: Watschke, T.L., D.J. Wehner, and J.M. Duich, "Pre- and Postemergence Crabgrass Control in Turf," Proc. NE Weed Sci. Soc. 30:358-366 (1976).

<1000>
CHEMICAL NAME: Benzenamine, 3,4-dimethyl-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: AC 92390
PLANT: Pine, white (PINUS STROBUS); Privet, California (LIGUSTRUM OVALIFOLIUM); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: 50 gpa as granules and incorporated
EXPERIMENTAL CONDITIONS: Sandy loam Soil; 3 replications, 20 ft plots, 3 to 5 white pines and 2 or 3 privets; randomized complete block design; June, July, and September 1973, June 1974 and August 1974 injury and weed control ratings
EFFECTS: Good to excellent crabgrass control, better at 4 lb/A; no white pine injury, slight discoloration of privet
REFERENCE: Ahrens, J.F., "Experimental Herbicides for Field-Grown Ornamentals," Proc. Northeast. Weed Sci. Soc. 30:297-302(1976).

<1001>
CHEMICAL NAME: Benzenamine, 3,4-dimethyl-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: AC-92390
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Moderate control of weeds and no adverse effect on peanut
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit futher testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<1002>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Soybean (GLYCINE MAX);Grasses;Broadleaf weeds
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preplant spray with soil incorporation (5 cm depth); preemergence spray; 188 l./ha; varied combinations of herbicides and types of applications studied
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy clay loam and Cecil sandy loam; 188 l./ha
EFFECTS: Effective control of grass weeds and moderate control of broadleaves with slight damage to soybean
COMMENTS: Sequential treatment of vernolate with linuron, prometryne, or chloramben ester controlled weeds more effectively in soybeans than did trifluralin or nitralin applied with the same preemergence treatments; soybean injury was not severe enough to reduce seed yields in any year.
REFERENCE: Johnson, B.J., "Effect of Herbicide Combinations on Weeds and Soybeans," Weed Sci. 19(6): 740-742 (1971).

<1003>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 1.0 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Effective pigweed control in preplanting application; moderate galinsoga control; no effect on beans
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<1004>
<1004>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Beggarweed, Florida (DESMODIUM TORTUOSUM); Pusley, Florida (RICHARDIA SCABRA) ; Peanut (ARACHIS HYPOGAEA); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.25, 0.50, 0.75, 1.0, 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Herbicides applied broadcast in 16 to 19 gallons of water per acre, spraying pressure 30psi using tractor-mounted compressed air sprayer; preplanting and preemergence applications
EXPERIMENTAL CONDITIONS: Dothan loamy sand; soil turned each winter and seedbeds prepared in March or early April; plots -- 6 rows wide each 20 feet long; herbicides in rows 3,4,5 and 6 incorporated 4 to 6 inches; peanuts planted immediately after incorporation; rows 1 and 2 had preemergence application
EFFECTS: 0.75, 1.5 and 1.0 lb/A gave almost complete control of annual grass weeds; preemergence applications less effective than preplant incorporated herbicides; broadleaf weed control generally less than grass weed control; no noticeable injury to peanut foliage; at higher rates of application (1.5 lb/A) substantial peanut yield reduction occurred
COMMENTS: Excellent control of annual grass weeds and substantial broadweed control; in general, increasing application rate of preemergence herbicides improved weed control; no measurable differences in weed control among herbicides tested
REFERENCE: Buchanan, G.A., R.D. McLaughlin, J. Bannon, and H. Ivy, "Performance of Dinitroaniline Herbicides in Peanuts," Proc. S. Weed Sci. Soc. 26: 95-105 (1973).

<1005>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Purslane, common (PORTULACA OLERACEA); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1.5 and 3 lb/A
APPLICATION METHODS: Formulation -- 75% WP; sprays applied in 50 gallon solution per acre; preplanting application of 1.5 and 0.75 lb/A; postplanting application of 1.5 lb/A
EXPERIMENTAL CONDITIONS: Chrysanthemums commercially grown two seasons on gravelly sandy loam; roots dipped in activated carbon to reduce herbicide injury to chrysanthemums
EFFECTS: Purslane satisfactorily controlled at higher preplanting application; no injury to chrysanthemums with preplanting application; minor chrysanthemum injury with postplanting application
COMMENTS: During first growing season, flooding affected herbicide incorporation and chrysanthemum growth; no treatment controlled weeds all season without injury to chrysanthemums; use of multiple applications not thoroughly investigated; suggestions given for sequential herbicide use
REFERENCE: Ahrens, J.F., "Weed Control in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 28:386-394(1974).

<1006>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Quackgrass (AGROPYRON REPENS); Nutsedge, yellow (CYPERUS ESCULENTUS); Lamb's-quarters (CHENOPODIUM ALBUM); Yew, upright (TAXUS CUSPIDATA); Chickweed, common (STELLARIA MEDIA); Horseweed (ERIGERON CANADENSIS); Vetch, bird (VICIA CRACCA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Carpetweed (MOLLUGO VERTICILLATA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Formulation -- 75% WP; sprays applied with hand-held boom to deliver 50 gal/A
EXPERIMENTAL CONDITIONS: Yews (5 years old) spaced at 2 foot intervals in rows 3 feet apart; herbicides applied on December 1, 1970 and again on December 9, 1971; soil was moist and 39 degree F at 3 inch depth at 1970 treatment, air temperature was 45 degrees F; December 1971 application -- 1 to 3 inches snow on ground and air temperature 39 degrees F
EFFECTS: No control of quackgrass or nutsedge; some extended control of annual weeds; no appreciable injury to yews
COMMENTS: Excessive rainfall second growing season accelerated herbicide leaching; results of weed control with combinations of herbicides reported
REFERENCE: Ahrens, J.F., "Fall Applications of Herbicides for Control of Quackgrass and Yellow Nutsedge in TAXUS CUSPIDATA CAPITATA," Proc. Northeast. Weed Sci. Soc. 28:379-385(1974).

<1007>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Crabgrass, large (DIGITARIA SANGUINALIS); Wiregrass (ELEUSINE INDICA); Bermudagrass, common (CYNODON DACTYLON); Sedge, annual (CYPERUS COMPRESSUS); Signalgrass, broad-leaf (BRACHIARIA PLATYPHYLLA); Eclipta (ECLIPTA ALBA)
EXPERIMENTAL DOSE: 1 lb/A
APPLICATION METHODS: Formulation -- 6% EC; sprays applied with knapsack sprayer at 40 psi pressure; preplanting in spring and preemergence in fall
EXPERIMENTAL CONDITIONS: Myakka Fine Sand; mulch -- 55 lb biodegradable kraft paper with surfaces coated with thin layer of polyethylene; fall and spring growing seasons; full bed mulch system; irrigation supplied by a seep ditch system -- each 7 row unit separated by a water ditch
EFFECTS: Weed control 90% when applied preplanting and incorporated; weed control 60% when applied preemergence through planting hole; no significant differences in fruit size or yield as a result of herbicide
COMMENTS: Fall growing season -- ideal weather, well distributed rainfall; spring growing season -- abnormally dry and hot; signalgrass and eclipta not encountered in fall
REFERENCE: Burgis, D.S., "Herbicides for the Full Bed Mulch Tomato Culture System - II: In-the-Row," Proc. South. Weed Sci. Soc. 26:201-204 (1973).

<1008>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Pigweed, smooth (AMARANTHUS HYBRIDUS); Amaranth, palmer (AMARANTHUS PALMERI); Pigweed, tumble (AMARANTHUS ALBUS); Amaranth, spiny (AMARANTHUS SPINOSUS); Pigweed, prostrate (AMARANTHUS GRAECIZANS)
EXPERIMENTAL DOSE: 0.33, 0.66, and 1.0 lb/A
APPLICATION METHODS: Preplanting application
EXPERIMENTAL CONDITIONS: Greenhouse study; species planted in pots in five replications; sandy loam soil
EFFECTS: Smooth and redroot pigweeds and Palmer amaranth less susceptible than other 3 species; 1.0 lb/A reduced emergence of all species
REFERENCE: Santelmann, P.W. and L. Evetts, "Germination and Herbicide Susceptibility of Six Pigweed Species," Weed Sci. 19(1):51-54 (1971).

<1009>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Yew (TAXUS INTERMEDIA); Chickweed, common (STELLARIA MEDIA); Primrose, cut-leaf evening (OENOTHERA LACINIATA); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 0.5, 1.0, and 1.5 lb/A
APPLICATION METHODS: Posttransplant spray; 374 l./ha at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--low flatwood fine sands; subsurface irrigation; time period--1970 to 1974
EFFECTS: Moderate control of weeds with no adverse effect on cabbage yield
COMMENTS: Most effective weed control obtained with alachlor, alachlor + CDEC, alachlor + DCPA, and DCPA + nitrofen; DCPA effective in controlling dock and chickweed, but controlled evening primrose less effectively; nitrofen provided excellent control of dock and fair to good control of evening primrose.
REFERENCE: Shumaker, J.R., "Chemical Weed Control in North Florida Cabbage," Fla. State Hort. Soc. 87:170-174 (1974).

<1010>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 75% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate overall weed control and control of barnyard grass but effective control of purslane and pigweed with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<1011>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Grasses; Broadleaf weeds; Sicklepod (CASSIA OBTUSIFOLIA); Morningglory (IPOMOEA sp.); Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preplant spray; 188 l./ha (incorporated, 5 cm depth) or 282 l./ha (injected, 5 cm depth)
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy loam or Cecil clay loam; time period--1969 to 1971
EFFECTS: Preplant incorporated--effective control of grasses and generally moderate control of broadleaf weeds with slight to moderate injury to sunflower
COMMENTS: Alachlor applied in combination with either chlorpropham or prometryne satisfactorily controlled grasses and broadleaf weeds in sunflowers planted in April and June from 1969 through 1971; higher percentage of broadleaf weeds controlled with herbicides applied preemergence to sunflowers planted in April than when applied to sunflowers planted in June.
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Preplant or Preemergence on Weeds and Sunflowers," Crop Sci. 12(1):650-653 (1972).

<1012>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Grasses; Broadleaf weeds; Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Preplant incorporated; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 13 locations in Iowa
EFFECTS: Effective control of grasses with no adverse effect on soybean
COMMENTS: Dinitroaniline chemicals applied at proper rates for organic matter levels present provided good to excellent grass control; rate probably more critical for organic matter on BAS-3901, CG-10832 and dinitramine than for trifluralin; organic matter exceedingly critical for nitraline; vernolate provided good grass control and at most locations, better broadleaf control than dinitroaniline chemicals; preplant incorporated plus overlay treatment can increase broadleaf and overall weed control and usually result in less phototoxicity to the crop
REFERENCE: Jennings, V.M., D.W. Staniforth, and W.G. Lovely, "Soybean Herbicide Evaluations Across Iowa in 1973," Proc. N. Cent. Weed Contr. Conf. 28:42-45 (1973).

<1012>
<1013>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Couchgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete or near complete control of shoot emergence at 10(-3) and 10(-4)M; moderate control at 10(-5) and 10(-6)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.P. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1014>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.0 lb/A, 4% WP
APPLICATION METHODS: Preemergence spray; combined herbicides and types of application
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7
EFFECTS: Effective control of weeds with no adverse effect on cucumber
COMMENTS: Control of crabgrass, pigweed, ragweed and lambsquarters in seeded cucumbers and squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence, and preemergence applications of chloramben methyl ester alone; in cucumbers only, bensulide preplant incorporatd + chloramben methyl ester preemergence, bensulide preplant incorporated + dinoseb preemergence over activated charcoal, and nitralin preemergence gave excellent full-season weed control
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<1015>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Grasses; Broadleaf weeds; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.56 and 0.84 kg/ha
APPLICATION METHODS: Postemergence spray, semi-directed; 188--235 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy loam; time period--1968 and 1969
EFFECTS: Effective control of grasses at both rates and moderate control of broadleafs at both rates with slight injury to soybean
COMMENTS: Nitralin controlled grasses and chloroxuron controlled broadleaf weeds in soybeans as well singly as when combined; in 1 year out of 2, nitralin and chloroxuron in combination caused more plant injury than either herbicide alone
REFERENCE: Johnson, B.J., Effects on Nitralin and Chloroxuron Combination on Weeds and Soybeans," Weed Sci. 18(5):616-618 (1970).

<1016>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Plants; Stonecrop (SEDUM BREVIFOLIUM); (DELASPERMA ALBA); Ivy, Algerian (HEDERA sp.); (OSTEOSPERMUM FRUT.); Iceplant (CARPOBROTUS EDULE); Periwinkle, large (VINCA MAJOR)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil-sandy loam; evaluation times--1, 2, 6, and 9 mos
EFFECTS: Moderate control of weeds with slight damage to ground cover plants that usually lasted only 3 mos
COMMENTS: Use of herbicides significantly less expensive than hand weeding; all herbicide treated plots of iceplant had greater fresh weight and rooting than non-weeded controls; oxadiazon, oryzalin, and nitrofen + nitralin appeared most effective
REFERENCE: Elmore, C.L. and W.A. Humphery, "Preemergence Weed Control in Ground Cover Ornamentals," Proc. West. Soc. Weed. Sci. 27:62-65 (1974).

<1017>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Soybean (GLYCINE MAX); Velvetleaf (ABUTILON THEOPHRASTI); Millet, foxtail (SETARIA ITALICA)
EXPERIMENTAL DOSE: 1X10(-5), 1X10(-6), and 1X10(-7)M
APPLICATION METHODS: Solution addition to sand (75 ml/pot in greenhouse study); solution addition to nutrient agar (laboratory study)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand culture in pots (cups); temperature--21 C (day) and 17 C (night); evaluation time--28 days; laboratory study; temperature--30 C in darkened incubator
EFFECTS: At 1X10(-5)M, reduced growth of all test plants
COMMENTS: Dinitramine most toxic to each species; dinitramine, trifluralin, and BAS-3921 H most inhibitory of soybean shoot growth, while oryzalin, dinitramine, and BAS-3921 H most inhibitory of root growth
REFERENCE: Harvey, R.G., "Relative Phytotoxicities of Dinitroaniline Herbicides," Weed Sci. 21(6):517-520 (1973).

<1018>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--50% or greater inhibition in sorghum and oat but less than 50% in cucumber at 1 and 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 ppm, 50% or greater inhibition in sorghum and less than 50% in oat at 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<1019>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.75 and 1.5 lb/A
APPLICATION METHODS: Preplanting incorporated; application at 17.6 gpa in 1972 and 21 gpa in 1973
EXPERIMENTAL CONDITIONS: Memphis silt loam; field tests; herbicides used at suggested and twice the suggested rates; 2 year experiment; randomized complete block design with 4 replications; plots--eight 38-inch rows 30 ft long, 4 center rows harvested for soybean yield determination; entire area plowed before planting each year; dvanap added for broadweed weed control; plots also cultivated at timely intervals; cultivated checks, 9.1 Bu/A (1972), 16.0 Bu/A (1973)
EFFECTS: 1972--62% seedling control on June 13, 36 and 16% rhizome control on June 13 and Nov. 11 respectively at 0.75 lb/A, 62% seedling and 39% rhizome control on June 13 and 34% rhizome control on Nov. 11 at 1.5 lb/A; 1973--35% seedling, 65, 66, and 46% rhizome control on June 4, June 4, Aug. 14 and Nov. 2 respectively at 0.75 lb/A, 60% seedling, 65, 61 and 62% rhizome control respectively at 1.5 lb/A; soybean yield--18.5 and 23.6 Bu/A in 1972 and 31.7 and 36.1 Bu/A in 1973 at 0.5 and 1.5 lb/A respectively
COMMENTS: No soybean injury reported
REFERENCE: Overton, J.R., J.A. Mullins, and L.S. Jeffery, "Control of Johnsongrass in Soybeans with Preplant Incorporated Herbicides," Tenn. Farm Home Sci. Prog. Rep. 90:5-7(1974).

<1020>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Carrot (DAUCUS CAROTA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; seedbeed prepared April 25; 4 replications; weed control evaluated on August 2
EFFECTS: Poor control of pigweed and foxtail
COMMENTS: Herbicide combinations also tested; no injury rating for carrots; heavy rains delayed planting until May 2
REFERENCE: Noll, C.J., "Evaluation of Eight Herbicides Alone and in Combination for Weed Control in Carrots," Proc. Northeast. Weed Sci. Soc. 28:167-171 (1974).

<1021>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Panicum, Texas (PANICUM TEXANUM); Sida, spiny (SIDA SPINOSA); Cotton (GOSSYPIUM HIRSUTUM); Peanut (ARACHIS HYPOGAEA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.56, 1.12, and 1.68 kg/ha
APPLICATION METHODS: Preplanting incorporated; application by experimental-plot tractor-sprayer
EXPERIMENTAL CONDITIONS: Field study; randomized block design, 2.74 by 7.62 m plots with 3 replications; Vanoss loam soil--pH of 5.1, 1.2% organic matter; 3 crops and 2 weed species, crop rows 7.62 m long with 7.62 cm centers, weeds planted between crop rows; visual ratings after 16 days
EFFECTS: Panicum control--60, 73, and 70% at respective rates; prickly sida control--27, 23, and 47% at respective rates; cotton injury--3, 3, and 7% of crop at respective rates; peanut injury--6, 0, and 10% of crop at respective rates; soybean injury--no injury at any rate
COMMENTS: Comparison of 9 dinitroaniline compounds; cotton was least tolerant of increased dinitroaniline herbicide rates, soybeans the most tolerant; definable phytotoxicity variation as chemical structure changes
REFERENCE: Murray, D.S., P.W. Santelmann, and H.A.L. Greer, "Differential Phytotoxicity of Several Dinitroaniline Herbicides," Agron. J. 65:34-36 (1973).

<1022>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 0.6, 0.8 and 1.1 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments to 3.8 cm depth; 3 rates applied in spring, 0.6 and 1.1 kg/ha in fall
EXPERIMENTAL CONDITIONS: Four field tests--2 seeded in fall, 2 in spring; fall seedings in September, spring

<1022>
<1022> CONT.
seedings in April; herbicide treatments were main plots, legumes were subplots; early injury and control ratings made 5 to 10 weeks after seeding, later observations made 3 to 4 weeks after initial recordings for spring planting and the following spring for fall plantings
EFFECTS: Alfalfa--low rate gave 18% early and 19% late injury, high rate gave 13% early and 23% late injury; clover--low rate gave 8% early and 33% late injury, high rate gave 63% early and 53% late injury; crownvetch--low rate gave 10% early and 25% late injury, high rate gave 43% early and 35% late injury; broadleaf weeds--low rate gave 65% early and 68% late control, high rate gave 85% early and 87% late control
COMMENTS: No apparent difference in legume injury from spring and fall treatments; results represent combined fall and spring observations
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<1023>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Cucumber (CUCUMIS SATIVUS); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence; postemergence application of BAS-3512 H only
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7; time period--1972
EFFECTS: Effective control of weeds and no adverse effect on cucumber
COMMENTS: Effective control of large crabgrass, redroot pigweed, common ragweed and lambsquarters in seeded cucumbers and summer squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence and preemergence applications of chloramben methyl ester alone
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<1024>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Spinach (SPINACIA OLERACEA); Grasses; Purslane, common (PORTULACA OLERACEA); Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 0.5 lb/A; 4% EC
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence applications
EXPERIMENTAL CONDITIONS: Field study; soil--Norfolk loamy sand; irrigation
EFFECTS: Effective control of weeds with no adverse effect on lima beans
COMMENTS: Acceptable weed control and yields obtained with trifluralin and profluralin; dinitramine significantly reduced stand, vigor, and yields of baby lima beans; alachlor provided acceptable weed control without yield reduction; combined herbicide applications just as effective
REFERENCE: Beste, C.E., "New Herbicides for Lima Beans," Proc. Northeast. Weed Sci. Soc. 29:194-196 (1975).

<1025>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Broom corn (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 ppm
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; soil-prepared with varying peat, sand, clay, lime, and loam content; plastic cup culture; temperature--15.7 to 37 C
EFFECTS: Moderately reduced growth in leaf length at 4.0 ppm
COMMENTS: Phytotoxicity of benefin significantly correlated with organic matter content but not with clay or lime content of soils; after 1 month of incubation no significant activity remained from 2 ppm benefin, and after 2 months only slight activity remained from 4 ppm; benefin less persistent than trifluralin and more persistent than nitralin
REFERENCE: Horowitz, M. and T. Blumenfeld, "Behavior and Persistence in Soil of Benefin," Phytoparasitica 2(1):19-24 (1974).

<1026>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Cucumber (CUCUMIS SATIVUS); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 0.8 and 1.7 kg/ha
APPLICATION METHODS: Preplant spray; 170 l./ha; soil incorporation (5 cm depth); preemergence sprays for nitralin and chloramben
EXPERIMENTAL CONDITIONS: Field study; soil--Paison fine sandy loam; two locations; time period--1967 and 1968; evaluation time--25 da
EFFECTS: Moderate control of broadleafs and effective control of grasses with initial injury to lettuce but no effect on yield
COMMENTS: DCPA and nitralin gave best weed control, while benefin and the methyl ester of chloramben less effective in controlling weeds; poorest weed control performance observed with bensulide; nitralin, DCPA, benefin, and methyl ester of chloramben caused crop injury if leaching rains followed application; despite early herbicide injury, yields usually not adversely affected
REFERENCE: Monaco, T.J. and Miller, C.H., "Herbicide Activity in Pickling Cucumber," Weed Sci. 20(6):545-548 (1972).

<1027>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preemergence spray; soil incorporated
EXPERIMENTAL CONDITIONS: Field study; soils--Bosket very fine sandy loam, Dundee silty clay loam, and Sharkey clay; time period--1964 to 1965 and 1970
EFFECTS: Reduced rhizome growth
COMMENTS: Incorporation of trifluralin in soil reduced rhizome production approximately 50% throughout soil profile but reduced rhizome production most in top 6 cm; more plants emerged from rhizomes when planted in sandy loam than in clay
REFERENCE: McWhorter, C.G., "Factors Affecting Johnsongrass Rhizome Production and Germination," Weed Sci. 20(1):41-45 (1972).

<1028>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.56, 0.84, 1.12, 1.68, and 2.24 kg/ha
APPLICATION METHODS: Preplant incorporated; 187 l./ha; applied annually over a period of six years in fall or spring; dalapon applied postemergence; combined and sequential treatments also applied
EXPERIMENTAL CONDITIONS: Field study; soils--Sharkey clay, Bosket fine sandy loam; and Dundee silty clay loam; time period--1965 to 1970
EFFECTS: Moderate control of johnsongrass at highest rates with no adverse effect on soybean yield
COMMENTS: Effective johnsongrass control on Dundee silty clay loam followed treatments of nitralin or trifluralin, but 2 years or more of continuous treatment needed for acceptable control
REFERENCE: McWhorter, C.G., "Johnsongrass Control in Soybeans with Trifluralin and Nitralin," Weed Sci. 22(2):111-115 (1974).

<1029>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.6 and 1.1 kg/ha
APPLICATION METHODS: Preplant incorporation; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Bosket sandy loam and Sharkey clay
EFFECTS: Moderate control of johnsongrass at 1.1 kg/ha with very slight initial injury to soybean but no adverse effect on yield
COMMENTS: On Bosket sandy loam soil, best average johnsongrass control over a 2-yr period obtained following profluralin and butralin; these treatments also resulted in highest average soybean yields
REFERENCE: McWhorter, C.G., "Johnsongrass Control in Soybeans with Soil-Incorporated Dinitroaniline Herbicides," Weed Sci. 25(3):264-267 (1977).

<1030>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Squash, summer (CUCURBITA PEPO); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass (DIGITARIA sp.); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.5, 0.75, and 1.0 lb/A
APPLICATION METHODS: Preplant and preemergence applications; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of fall panicum but poor to moderate control of other weeds with slight reduction of squash stand; preemergence application slightly more active
COMMENTS: Outstanding preplant incorporated treatment was bensulide followed by chloramben, methyl ester applied preemergence; outstanding preemergence treatment for both weed control and yield was chloramben, methyl ester + asulam; crop injury induced by following preplant incorporated treatments: dibutalin, dinitramine (USB 3584), nitralin, and bensulide followed by naptalam applied preemergence
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "Some Promising Herbicides for Weed Control in Summer Squash," Proc. Northeast. Weed Sci. Soc. 28:224-228 (1974).

<1031>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Soybean (GLYCINE MAX); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preplant spray; soil incorporation by rototilling (5 cm); postemergence spray; 188-282 l/ha; 0.5% surfactant; lay by and directed sprays; varied combinations of herbicides and methods of application
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy loam and Cecil sandy clay loam; evaluation time--3, 5, 7 or 8, and 11 wks; time period--1968 to 1970
EFFECTS: Effective control of grass weeds and slight to moderate control of broadleaf weeds with moderate damage to soybean in preplant application
COMMENTS: When chloroxuron applied in sequence with split application of either linuron or prometryne, control of broadleaf weeds comparable to that obtained when preplant treatments applied in sequence with these postemergence treatments in 1969 and 1970; control of grasses by these postemergence treatments less effective than single preplant treatments
REFERENCE: Johnson, B.J., "Effects of Sequential Herbicide Treatments on Weeds and Soybeans," Weed Sci. 19(6):695-700 (1971).

<1032>
<1032>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Field study, 3 years; 3 by 6 m plots; Mattapeake soil; randomized complete block design with 4 replications
EFFECTS: No soybean injury; good foxtail control; no control of ragweed and nutsedge
REFERENCE: Parochetti, J.V., R.W. Feeny, and S.R. Colby, "Preemergence Herbicides plus Postemergence Chloroxuron on Soybeans," Weed Sci. 20(6):548-553 (1972).

<1033>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 0.75 and 1.5 lb/A
APPLICATION METHODS: Preplanting incorporated at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: Minor stand reduction at low rate, slight increase in stand at high rate; excellent weed control
COMMENTS: Herbicide combinations also tested
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<1034>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.75 and 1.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Poor sesame tolerance and erratic barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<1035>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 micro M to 1.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplast and mung bean hypocotyl assays; evaluation time--up to 3 hr
EFFECTS: Strong inhibition of one or more cyclic or noncyclic photophosphorylation reactions, mitochondrial oxidation of varied substrates, and ATPase activity
COMMENTS: 2,6-dinitroanilines inhibited both electron transport and phosphorylation in isolated chloroplasts and mitochondria; interference with photoproduction of ATP chloroplasts evidenced by increased sensitivity of photophosphorylation over the coupled photoreduction to the 2,6-dinitroanilines when water served as electron donor, and by inhibition of photophosphorylation mediated by PMS in an argon atmosphere
REFERENCE: Moreland, D.E., F.S. Farmer, and G.G. Hussey, "Inhibition of Photosynthesis and Respiration by Substituted 2,6-Dinitroaniline Herbicides," Pest. Biochem. & Phys. 1:342-353 (1971).

<1036>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Pepper, hot (CAPSICUM ANNUUM); Santa Maria (PARTHENIUM HYSTEROPHORUS); Nutsedge, purple (CYPERUS ROTUNDUS); (CLEOME CILIATA); (BOERHAVIA DIFFUSA); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); Pinkroot (SPIGELIA ANTHELMIA); Junglerice (ECHINOCHLOA COLONUM); Wiregrass (ELEUSINE INDICA); Sandbur (CENCHRUS ECHINATUS)
EXPERIMENTAL DOSE: 0.75 kg/ha
APPLICATION METHODS: Preplanting incorporated treatment
EXPERIMENTAL CONDITIONS: Seed bed trial; application 3 days before sowing
EFFECTS: Good control of most weeds; seedling emergence and early hot pepper growth damaged
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<1037>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Pea, sweet (PISUM SATIVUM); Cucumber (CUCUMIS SATIVUS); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Wheat (TRITICUM AESTIVUM); Oat (AVENA SATIVA); Barley (HORDEUM VULGARE); Rice (ORYZA SATIVA); Corn (ZEA MAYS); Sorghum (SORGHUM BICOLOR); Millet, foxtail (SETARIA ITALICA); Foxtail, giant (SETARIA FABERI); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 0.02 to 16 ppm; 1.12 kg/ha
APPLICATION METHODS: Mixed in sand for seed germination and preplanting evaluations (greenhouse); soil incorporated by rototilling (field)
EXPERIMENTAL CONDITIONS: Laboratory study; petri plate; sand culture; greenhouse study; vapor toxicity study;

<1037> CONT.
field study
EFFECTS: More toxic to roots than trifluralin
COMMENTS: Nitralin did not prevent emergence of any species; trifluralin was more toxic than nitralin to the shoots of sorghum and cucumber via shoot exposure; nitralin more toxic than trifluralin to roots via root exposure; comparison of phytoxicity through vapor activity showed trifluralin much more toxic than nitralin
REFERENCE: Barrentine, W.L. and G.F. Warren, "Differential Phytotoxicity of Trifluralin and Nitralin," Weed Sci. 19(1):31-37 (1971).

<1038>
CHEMICAL NAME: Benzenamine, 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Nitralin
PLANT: Soybean (GLYCINE MAX); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Carpetweed (MOLLUGO VERTICILLATA); Chamomile, corn (ANTHEMIS ARVENSIS); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.75, 1.00, and 1.50 lb/A
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold sandy loam
EFFECTS: Effective control of pigweed and carpetweed, moderate control of chamomile, and slight control of shepherd's purse and panicum with no adverse effect on soybean
COMMENTS: Most effective dinitroaniline herbicide was dinitroaniline which gave moderate to effective control of all weeds with no adverse effect on soybeans; vigor reduction by some herbicides did not affect yield
REFERENCE: Ilnicki, R.D., D.J. Herman and J. Somody, "The Response of Soybeans to Some Dinitroaniline Herbicides," Proc. Northeast. Weed Sci. Soc. 29:17-18 (1975).

<1039>
CHEMICAL NAME: Benzenamine, 4-(1-methylethyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Isopropalin
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Tomato (LYCOPERSICON ESCULENTUM); Crabgrass, large (DIGITARIA SANGUINALIS); Stinkgrass (ERAGROSTIS CILIANENSIS); Goosegrass (ELEUSINE INDICA)
EXPERIMENTAL DOSE: 1.0-2.0 lb/A
APPLICATION METHODS: Pre-planting spray; 34 gal/acre; rotitilling--3 in. deep ; EC formulation
EXPERIMENTAL CONDITIONS: Field study; soil--Norfolk loamy sand; evaluation time--one and three months; seven types of application schedules employed selectively
EFFECTS: Effective weed control at 2.0 lb/ of lambsquarters and grasses for 3 mos with little effect on tomato vigor and yield; in combination with trifluralin--about same degree of weed control but reduced tomato yield
COMMENTS: Of a number of herbicides and herbicide combinations evaluated, S-6044 (undisclosed chemistry) applied as preemergence herbicide appeared most promising (excellent weed control without tomato injury)
REFERENCE: Beste, C.E., "Weed Control in Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 28:265-269 (1974).

<1040>
CHEMICAL NAME: Benzenamine, 4-(1-methylethyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Isopropalin
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed (AMARANTHUS sp.); Nightshade (SOLANUM sp.); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Nutsedge (CYPERUS sp.)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Sprinkler irrigation; furrow irrigation
EXPERIMENTAL CONDITIONS: Not Given
EFFECTS: Herbicide acceptably controlled all weeds tested
REFERENCE: Agamalian, H., B. Fischer, F. Ashton, A. Lange, E. Stilwell, R. Brendler, H. Kempen, V. Schweers, H. Collins, R. King, and L. Buschmann, "Weed Control Studies in Tomatoes, 1968-1970," Calif. Agric. 26(1): 10-11 (1972).

<1041>
CHEMICAL NAME: Benzenamine, 4-(1-methylethyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Isopropalin
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Crabgrass, large (DIGITARIA SANGUINALIS); Wiregrass (ELEUSINE INDICA); Bermudagrass, common (CYNODON DACTYLON); Sedge, annual (CYPERUS COMPRESSUS); Signalgrass, broad-leaf (BRACHIARIA PLATYPHYLLA); Eclipta (ECLIPTA ALBA)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Formulation -- 6% EC; sprays applied with knapsack sprayer at 40 psi pressure; preplanting application; incorporated in 12-inch band prior to laying mulch
EXPERIMENTAL CONDITIONS: Myakka Fine Sand; mulch -- 55 lb biodegradable kraft paper with surfaces coated with thin layer of polyethylene; fall and spring growing seasons; full bed mulch system; irrigation supplied by a seep ditch system -- each 7 row unit separated by a water ditch
EFFECTS: Weed control better than 90%; no significant differences in fruit size or yield as a result of herbicide
COMMENTS: Fall growing season -- ideal weather, well distributed rainfall; spring growing season -- abnormally dry and hot; signalgrass and eclipta not encountered in fall
REFERENCE: Burgis, D.S., "Herbicides for the Full Bed Mulch Tomato Culture System - II: In-the-Row," Proc. South. Weed Sci. Soc. 26:201-204 (1973).

<1042>
<1042>
CHEMICAL NAME: Benzenamine, 4-(1-methylethyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Isopropalin
PLANT: Soybean (GLYCINE MAX); Velvetleaf (ABUTILON THEOPHRASTI); Millet, foxtail (SETARIA ITALICA)
EXPERIMENTAL DOSE: 1X10(-5), 1X10(-6), and 1X10(-7)M
APPLICATION METHODS: Solution addition to sand (75 ml/pot in greenhouse study); solution addition to nutrient agar (laboratory study)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand culture in pots (cups); temperature--21 C (day) and 17 C (night); evaluation time--28 days; laboratory study; temperature--30 C in darkened incubator
EFFECTS: At 1X10(-5)M, reduced growth of all test plants
COMMENTS: Dinitramine most toxic to each species; dinitramine, trifluralin, and BAS-3921 H most inhibitory of soybean shoot growth, while oryzalin, dinitramine, and BAS-3921 H most inhibitory of root growth
REFERENCE: Harvey, R.G., "Relative Phytotoxicities of Dinitroaniline Herbicides," Weed Sci. 21(6):517-520 (1973).

<1043>
CHEMICAL NAME: Benzenamine, 4-(1-methylethyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Isopropalin
PLANT: Squash, summer (CUCURBITA PEPO); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass (DIGITARIA sp.); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.5, 0.75, 1.0, and 1.25 lb/A
APPLICATION METHODS: Preplant application with soil incorporation; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Poor to moderate control of weeds; reduced squash stand or vigor
COMMENTS: Outstanding preplant incorporated treatment was bensulide followed by chloramben, methyl ester applied preemergence; outstanding preemergence treatment for both weed control and yield was chloramben, methyl ester + asulam; crop injury induced by following preplant incorporated treatments: dibutalin, dinitramine (USB 3584), nitralin, and bensulide followed by naptalam applied preemergence
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "Some Promising Herbicides for Weed Control in Summer Squash," Proc. Northeast. Weed Sci. Soc. 28:224-228 (1974).

<1044>
CHEMICAL NAME: Benzenamine, 4-(1-methylethyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Isopropalin
PLANT: Pea, sweet (PISUM SATIVUM); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Mustard, wild (BRASSICA KABER); Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.84 and 1.68 kg/ha
APPLICATION METHODS: Solution addition to pea seed (germination); field spray 187 l/ha at 183 kg/sq cm; soil incorporation preplant
EXPERIMENTAL CONDITIONS: Greenhouse study--plastic cup culture (germination); silica sand; 21 C (day) and 17 C (night), evaluation time-21 days; field study; soil--Plano silt loam, pH-6.3, evaluation time--21 days and at harvest
EFFECTS: No adverse effect on pea with effective control of weeds
COMMENTS: Field trials conducted over 3-yr period demonstrated that all eight herbicides successfully controlled weeds; use of trifluralin resulted in lowest shelled pea yields; significant reductions in yield occurred from trifluralin in 1973 and 1975 when compared with the untreated checks
REFERENCE: Harvey, R.G. and G.L. Jacques, "Dinitroaniline Herbicides for Weed Control in Peas," Weed Sci. 25(3):256-259 (1977).

<1045>
CHEMICAL NAME: Benzenamine, 4-(1-methylethyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Isopropalin
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Poor sesame tolerance and erratic barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<1046>
CHEMICAL NAME: Benzenamine, 4-(1-methylethyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Isopropalin
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 micro M to 1.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplast and mung bean hypocotyl assays; evaluation time--up to 3 hr
EFFECTS: Strong inhibition of one or more cyclic or noncyclic photophosphorylation reactions, mitochondrial oxidation of varied substrates, and ATPase activity
COMMENTS: 2,6-dinitroanilines inhibited both electron transport and phosphorylation in isolated chloroplasts and mitochondria; interference with photoproduction of ATP chloroplasts evidenced by increased sensitivity of photophosphorylation over the coupled photoreduction to the 2,6-dinitroanilines when water served as electron donor, and by inhibition of photophosphorylation mediated by PMS in an argon atmosphere
REFERENCE: Moreland, D.E., F.S. Farmer, and G.G. Hussey, "Inhibition of Photosynthesis and Respiration by Substituted 2,6-Dinitroaniline Herbicides," Pest. Biochem. & Phys. 1:342-353 (1971).

<1047>
CHEMICAL NAME: Benzenamine, 4-(1-methylethyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Isopropalin
PLANT: Pigweed (AMARANTHUS sp.); Purslane, common (PORTULACA OLERACEA); Santa Maria (PARTHENIUM HYSTEROPHORUS); (PHYLLANTHUS AMARUS); Wiregrass (ELEUSINE INDICA); Junglerice (ECHINOCHLOA COLONUM); Crabgrass (DIGITARIA INSULARIS); Nutsedge, purple (CYPERUS ROTUNDUS); Groundnut (PANAX TRIFOLIUM); Pepper, hot (CAPSICUM ANNUUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.5 and 3.0 kg/ha
APPLICATION METHODS: Preplanting treatment
EXPERIMENTAL CONDITIONS: Loam soil; non-field experiments
EFFECTS: Weed control good, all crops safe
COMMENTS: Promising herbicides from these studies tested in field
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<1048>
CHEMICAL NAME: Benzenamine, 4-(1-methylethyl)-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Isopropalin
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/A
APPLICATION METHODS: Pretransplant application to soil; rototilling to 3-4 in. depth; broadcast spray; 43 gal/A
EXPERIMENTAL CONDITIONS: Field study; normal cultivation
EFFECTS: Effective weed control; slight loss in vigor of tobacco plants but insignificant effect on yield
COMMENTS: Several herbicides or herbicide combinations provided effective weed control without affecting tobacco yield
REFERENCE: Chapman, W.H., "Weed Control and Crop Tolerance with Various Herbicides Applied to Florida Shade Tobacco", Proc. S. Weed Sci. Soc. 26:170-172 (1973).

<1049>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: A-820
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 50 gal at 30 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1969 to 1971
EFFECTS: Moderate to effective control of all weeds in preplant incorporated and postemergence applications with no significant adverse effect on potato yield
COMMENTS: All treatments rated good to excellent in broadleaf weed control; all chemical treatments equal or superior to cultivation in control of broadleaf weeds
REFERENCE: Swingle, H.D. and C. Mullins, "Herbicide Trials with Irish Potatoes," Proc. S. Weed Sci. Soc. 26:256-258 (1973).

<1050>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Amex 820
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 38 gal/A at 20 psi; 4% EC Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate weed control with no adverse effect on potato yield
COMMENTS: Metribuzin alone or in combination with other materials very effective in controlling barnyard grass and lady's thumb; other chemicals also effective in maintaining commercially acceptable weed control throughout season
REFERENCE: Sanok, W.J. and L.R. Weber, "Evaluation of Potato Herbicides on Long Island 1974," Proc. Northeast. Weed Sci. Soc. 29:316-318 (1975).

<1051>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: A-820
PLANT: Beggarweed, Florida (DESMODIUM TORTUOSUM); Pusley, Florida (RICHARDIA SCABRA) ; Peanut (ARACHIS HYPOGAEA); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.25, 0.50, 0.75, 1.0, 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Herbicides applied broadcast in 16 to 19 gallons of water per acre, spraying pressure 30psi using tractor-mounted compressed air sprayer; preplanting and preemergence applications
EXPERIMENTAL CONDITIONS: Dothan loamy sand; soil turned each winter and seedbeds prepared in March or early April; plots -- 6 rows wide each 20 feet long; herbicides in rows 3,4,5 and 6 incorporated 4 to 6 inches; peanuts planted immediately after incorporation; rows 1 and 2 had preemergence application
EFFECTS: 0.75, 1.5 and 1.0 lb/A gave almost complete control of annual grassweeds; preemergence applications less effective than preplant incorporated herbicides; broadleaf weed control generally less than grassweed control; no noticeable injury to peanut foliage
COMMENTS: Excellent control of annual grass weeds and substantial broadweed control; in general, increasing application rate of preemergence herbicides improved weed control; no measurable differences in weed control among herbicides tested
REFERENCE: Buchanan, G.A., R.D. McLaughlin, J. Bannon, and H. Ivy, "Performance of Dinitroaniline Herbicides in Peanuts," Proc. S. Weed Sci. Soc. 26: 95-105 (1973).

<1052>
<1052>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Dibutalin
PLANT: Purslane, common (PORTULACA OLERACEA); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1.5 and 3 lb/A
APPLICATION METHODS: Formulation -- 4 lb/gal EC; sprays applied in 50 gallon solution per acre; preplanting applicaiton
EXPERIMENTAL CONDITIONS: Chrysanthemums commercially grown two seasons on gravelly sandy loam; roots dipped in activated carbon to reduce herbicide injury to chrysanthemums
EFFECTS: Purslane satisfactorily controlled at higher application; no noticeable injury to chrysanthemums
COMMENTS: During first growing season, flooding affected herbicide incorporation and chrysanthemum growth; no treatment controlled weeds all season without injury to chrysanthemums; use of multiple applications not thoroughly investigated; suggestions given for sequential herbicide use
REFERENCE: Ahrens, J.F., "Weed Control in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 28:386-394(1974).

<1053>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Butralin
PLANT: Cabbage (BRASSICA OLERACEA); Purslane, common (PORTULACA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pineappleweed (MATRICARIA MATRICARIODY)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Preplant incorporated; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; supplemental irrigation; crops direct seeded
EFFECTS: Effective control of barnyardgrass and moderate control of other weeds with slight phytotoxicity to cabbage
COMMENTS: Outstanding candidates for selectivity in seeded cabbage and control of barnyardgrass, purslane, and pineappleweed were H22234 and oryzalin; alachlor also gave excellent control but initial stunting of cabbage seedlings; by end of the season, phytotoxicity not visible with alachlor or any other treatment.
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicides for Weed Control in Sweet Corn and Cabbage," Proc. Northeast. Weed Sci. Soc. 31:256-260 (1977).

<1054>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Dibutalin
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-4)M; poor-moderate control at 10(-6) and 10(-7)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1055>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Amchem 70-25
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/A
APPLICATION METHODS: Preplant spray with soil incorporation (3 in. depth) by rototilling; combined herbicides and types of applications studied; 4% EC
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7
EFFECTS: Slight control of crabgrass and moderate control of other weeds with no damage to cucumber and severe damage to squash
COMMENTS: Control of crabgrass, pigweed, ragweed and lambsquarters in seeded cucumbers and squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence, and preemergence applications of chloramben methyl ester alone; in cucumbers only, bensulide preplant incorporated + chloramben methyl ester preemergence, bensulide preplant incorporated + dinoseb preemergence over activated charcoal, and nitralin preemergence gave excellent full-season weed control
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<1056>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Butralin
PLANT: Plants; Stonecrop (SEDUM BREVIFOLIUM); (DELASPERMA ALBA); Ivy, Algerian (HEDERA sp.); (OSTEOSPERMUM FRUT.); Iceplant (CARPOBROTUS EDULE); Periwinkle, large (VINCA MAJOR)
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil-sandy loam; evaluation times--1, 2, 6, and 9 mos
EFFECTS: Effective control (up to 3 mos) of weeds with slight damage to ground cover plants
COMMENTS: Use of herbicides significantly less expensive than hand weeding; all herbicide treated plots of iceplant had greater fresh weight and rooting than non-weeded controls; oxadiazon, oryzalin, and nitrofen + nitralin appeared most effective
REFERENCE: Elmore, C.L. and W.A. Humphery, "Preemergence Weed Control in Ground Cover Ornamentals," Proc. West. Soc. Weed. Sci. 27:62-65 (1974)

<1057>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: A-820
PLANT: Soybean (GLYCINE MAX); Velvetleaf (ABUTILON THEOPHRASTI); Millet, foxtail (SETARIA ITALICA)
EXPERIMENTAL DOSE: 1X10(-5), 1X10(-6), and 1X10(-7)M
APPLICATION METHODS: Solution addition to sand (75 ml/pot in greenhouse study); solution addition to nutrient agar (laboratory study)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand culture in pots (cups); temperature--21 C (day) and 17 C (night); evaluation time--28 days; laboratory study; temperature--30 C in darkened incubator
EFFECTS: At 1X10(-5)M, reduced growth occurred for soybean and foxtail with somewhat less effect on velvetleaf
COMMENTS: Dinitramine most toxic to each species; dinitramine, trifluralin, and BAS-3921 H most inhibitory of soybean shoot growth, while oryzalin, dinitramine, and BAS-3921 H most inhibitory of root growth
REFERENCE: Harvey, R.G., "Relative Phytotoxicities of Dinitroaniline Herbicides," Weed Sci. 21(6):517-520 (1973).

<1058>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: A-820
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Preplanting incorporated; application at 17.6 gpa in 1972 and 21 gpa in 1973
EXPERIMENTAL CONDITIONS: Memphis silt loam; field tests; herbicides used at suggested and twice the suggested rates; 2 year experiment; randomized complete block design with 4 replications; plots--eight 38-inch rows 30 ft long, 4 center rows harvested for soybean yield determination; entire area plowed before planting each year; dyanap added for broadweed weed control; plots also cultivated at timely intervals; cultivated checks, 9.1 Bu/A (1972), 16.0 Bu/A (1973)
EFFECTS: 1972--82% seedling, 29 and 19% rhizome control on June 13, June 13, and Nov. 11 respectively at 2 lb/A, 80% seedling, 46 and 34% rhizome control respectively at 4 lb/A; 1973--45% seedling, 55, 59, and 38% rhizome control on June 4, June 4, Aug. 14, and Nov. 2 respectively at 2 lb/A, 67% seedling, 62, 79, and 55% rhizome control respectively at 4 lb/A; soybean yield--17.2 and 20 Bu/A in 1972 and 29.6 and 34.3 Bu/A in 1973 at 2 and 4 lb/A respectively
COMMENTS: No soybean injury reported
REFERENCE: Overton, J.R., J.A. Mullins, and L.S. Jeffery, "Control of Johnsongrass in Soybeans with Preplant Incorporated Herbicides," Tenn. Farm Home Sci. Prog. Rep. 90:5-7(1974).

<1059>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: A-820
PLANT: Carrot (DAUCUS CAROTA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; seedbeed prepared April 25; 4 replications; weed control evaluated on August 2
EFFECTS: Fair control of pigweed, good control of green foxtail
COMMENTS: Herbicide combinations also tested; no injury rating for carrots; heavy rains delayed planting until May 2
REFERENCE: Noll, C.J., "Evaluation of Eight Herbicides Alone and in Combination for Weed Control in Carrots," Proc. Northeast. Weed Sci. Soc. 28:167-171 (1974).

<1060>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Dibutalin
PLANT: Foxtail, giant (SETARIA FABERI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Carrot (DAUCUS CAROTA); Foxtail, yellow (SETARIA LUTESCENS)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Preplanting incorporated and preemergence 1 day after planting
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed preparation the following April; single row plots 3 X 27 ft; 10 ft section of each plot harvested August 12; hand weeded control
EFFECTS: Both application types, fair weed control and minor carrot injury; preplant incorporated treatment gave slightly better control and slightly less injury
COMMENTS: Trifluralin and dibutalin tested in combination with other herbicides
REFERENCE: Noll, C.J., "Weeding of Carrots Using Preplant Incorporation Herbicides Followed by Preemergence and/or Postemergence Herbicides," Proc. Northeast. Weed Sci. Soc. 29:244-246 (1975).

<1061>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: A-820
PLANT: Panicum, Texas (PANICUM TEXANUM); Sida, spiny (SIDA SPINOSA); Cotton (GOSSYPIUM HIRSUTUM); Peanut (ARACHIS HYPOGAEA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.12, 2.24, and 3.36 kg/ha
APPLICATION METHODS: Preplanting incorporated; application by experimental-plot tractor-sprayer
EXPERIMENTAL CONDITIONS: Field study; randomized block design, 2.74 by 7.62 m plots with 3 replications; Vanoss loam soil--pH of 5.1, 1.2% organic matter; 3 crops and 2 weed species, crop rows 7.62 m long with 7.62 cm centers, weeds planted between crop rows; visual ratings after 16 days
EFFECTS: Panicum control--80, 77, and 93% at respective rates; prickly sida control--23, 23, and 37% at respective rates; cotton injury--0, 10, and 7% of crop at respective rates; peanut injury--0, 0, and 3% of crop at respective rates; soybean injury--none at any rate

<1061>
<1061> CONT.
COMMENTS: Comparison of 9 dinitroaniline compounds; cotton was least tolerant of increased dinitroaniline herbicide rates, soybeans the most tolerant; definable phytotoxicity variation as chemical structure changes
REFERENCE: Murray, D.S., P.W. Santelmann, and H.A.L. Greer, "Differential Phytotoxicity of Several Dinitroaniline Herbicides," Agron. J. 65:34-36 (1973).

<1062>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Butralin
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Bluegrass, annual (POA ANNUA); Parsley-piert (ALCHEMILLA MICROCORPA); Speedwell, corn (VERONICA ARVENSIS); Clover, hop (TRIFOLIUM AGARIUM); Bermudagrass, common (CYNODON DACTYLON); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 4.5 and 6.7 kg/ha
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: 3-year test on golf courses, 1-year test at Georgia Experiment Station; loam, sandy clay loam, and sandy loam soils; DCPA, benefin, terbutol, bensulide used as summer chemical checks, pronamide, DCPA, and terbutol used as winter chemical checks; 1.5 by 3.0 m plots, randomized complete block design with 4 replications; summer tests--crabgrass control in turfgrass; winter tests--control of annual bluegrass, parsley-piert, corn speedwell and hop clover; visual ratings
EFFECTS: Crabgrass control--80% avg. for 11 tests at 4.5 kg/ha, 87% avg. for all tests at 6.7 kg/ha; annual bluegrass control--3 years, 77, 79, and 95% at 4.5 kg/ha, 88, 91, and 98% at 6.7 kg/ha; parsley-piert control--3 years, 0, 0, and 67% at 4.5 kg/ha, 23, 0, and 85% at 6.7 kg/ha; corn speedwell control--3 years, 100, 98, and 100% at 4.5 kg/ha, 100, 100 and 100% at 6.7 kg/ha; hop clover control--2 years, 83% at both rates; no significant effect on Kentucky bluegrass or bermudagrass
COMMENTS: Combination of butralin with 2,4-D and silver not as effective as butralin alone
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<1063>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: A-820
PLANT: Foxtail, green (SETARIA VIRIDIS); Rapeseed (BRASSICA CAMPESTRIS); Rapeseed (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments applied in 202 l./ha water
EXPERIMENTAL CONDITIONS: Clay loam soil; spring planting; herbicide incorporation to 5 cm depth; control was an untreated check; plots--6.25 X 1.83 m with 8 rows spaced 22.9 cm apart; randomized complete block design with 4 replicates
EFFECTS: Moderate control of green foxtail at 1.12 kg/ha, good control at 2.24 kg/ha; no significant rapeseed yield difference between untreated check and A-820 treated plots
COMMENTS: Rapeseed--oilseed crop; crop yields from untreated check (no weed control) similar to yields from treated plots; population of foxtail was very light -- little weed competition as reflected by similar yields in treated and untreated plots
REFERENCE: Chow, P.N.P., "Dinitroaniline Herbicides for Grassy Weed Control in Rapeseed," Can. J. Plant Sci. 56:705-713 (1976).

<1064>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Amchem 70-25
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Squash, summer (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 1.0 and 3.0 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence; postemergence application of BAS-3512 H only
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7; time period--1972
EFFECTS: Effective control of all weeds in at least one trial but slight to moderate control of crabgrass and no or very slight injury to crops
COMMENTS: Effective control of large crabgrass, redroot pigweed, common ragweed and lambsquarters in seeded cucumbers and summer squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence and preemergence applications of chloramben methyl ester alone
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<1065>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: A-820
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 8.0 and 16.0 lb/A; 2.3% G
APPLICATION METHODS: Broadcast (G) with spreader; preemergence spray, 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; mature Kentucky bluegrass lawn; soils-sandy and loam; crabgrass seed sown on lawn just prior to applications
EFFECTS: Effective control of grass weeds but moderate damage to turf grass
COMMENTS: A-820, CG-10832, PPG-139 and RP-17623 gave good crabgrass control; April versus May application of several of preemergence types show that specific guidelines are needed to obtain efficient crabgrass control; goosegrass control fair to good for several chemicals, but all materials considered poor to unsatisfactory
REFERENCE: Engel, R.E., C.W. Bussey, and P. Catron, "Crabgrass and Goosegrass Control in Turfgrass with Several Preemerge Herbicides," Proc. Northeast. Weed Sci. Soc. 29:369-371 (1975).

<1066>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Butralin
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.7 and 3.4 kg/ha
APPLICATION METHODS: Preplant incorporation; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Bosket sandy loam and Sharkey clay
EFFECTS: Effective control of johnsongrass at 3.4 kg/ha with no adverse effect on soybean
COMMENTS: On Bosket sandy loam soil, best average johnsongrass control over a 2-yr period obtained following profluralin and butralin; these treatments also resulted in highest average soybean yields
REFERENCE: McWhorter, C.G., "Johnsongrass Control in Soybeans with Soil-Incorporated Dinitroaniline Herbicides," Weed Sci. 25(3):264-267 (1977).

<1067>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Dibutalin
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Grasses
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Effective control of all weeds except quackgrass with no adverse effect on potato yield
COMMENTS: Metolachlor applied preemergence and penoxalin applied layby did not provide satisfactory control of broadleaved weeds; none of the drag-off treatments with dinitramine, USB-3153, or trifluralin controlled broadleaved weeds; USB-3153 and trifluralin applied at drag-off did not give satisfactory control of quackgrass
REFERENCE: Murphy, H.J. and T. Gajewski, "Effect of Several Herbicides Applied Preemergence, at Drag-Off and Layby on Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 31:176-179 (1977).

<1068>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Butralin
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 3.36 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: In transplant applicaton, poor control of broadleaf weeds but effective control of grass with no tomato phytotoxicity
COMMENTS: Metribuzin, napropamide, and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<1069>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Dibutalin
PLANT: Squash, summer (CUCURBITA PEPO); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass (DIGITARIA sp.); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 1.5, 2.0, and 2.5 lb/A
APPLICATION METHODS: Preplant application with soil incorporation; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective control of weeds, but decreased squash stand
COMMENTS: Outstanding preplant incorporated treatment was bensulide followed by chloramben, methyl ester applied preemergence; outstanding preemergence treatment for both weed control and yield was chloramben, methyl ester + asulam; crop injury induced by following preplant incorporated treatments: dibutalin, dinitramine (USB 3584), nitralin, and bensulide followed by naptalam applied preemergence
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "Some Promising Herbicides for Weed Control in Summer Squash," Proc. Northeast. Weed Sci. Soc. 28:224-228 (1974).

<1070>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Butralin
PLANT: Pea, sweet (PISUM SATIVUM); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Mustard, wild (BRASSICA KABER); Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.84 and 1.68 kg/ha
APPLICATION METHODS: Solution addition to pea seed (germination); field spray 187 l/ha at 183 kg/sq cm; soil incorporation preplant
EXPERIMENTAL CONDITIONS: Greenhouse study--plastic cup culture (germination); silica sand; 21 C (day) and 17 C (night), evaluation time-21 days; field study; soil--Plano silt loam, pH-6.3, evaluation time--21 days and at harvest
EFFECTS: No adverse effect on pea with effective control of weeds
COMMENTS: Field trials conducted over 3-yr period demonstrated that all eight herbicides successfully controlled weeds; use of trifluralin resulted in lowest shelled pea yields; significant reductions in yield occurred from trifluralin in 1973 and 1975 when compared with the untreated checks
REFERENCE: Harvey, R.G. and G.L. Jacques, "Dinitroaniline Herbicides for Weed Control in Peas," Weed Sci. 25(3):256-259 (1977).

<1071>
<1071>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Butralin
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatment at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: Minor soybean injury (vigor reduction); complete pigweed control, excellent foxtail control, and moderate nutsedge control
COMMENTS: Herbicide combinations also tested
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<1072>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Butralin
PLANT: Crabgrass (DIGITARIA ISCHAEMUM); Bluegrass, Kentucky (POA PRATENSIS); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 4.48 to 6.72 kg/ha; 50% WS and 2.3% G
APPLICATION METHODS: Preemergence spray (40 psi and 50 gal/A) and granule broadcast
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; evaluation time--up to 5 mo
EFFECTS: Effective crabgrass control with very slight to no damage of turfgrasses
COMMENTS: Best control of crabgrass in both turf species obtained by DCPA, butralin, AC-92390, and prosulfalin; all rates of granular HOE-22870 provided good crabgrass control in red fescue; in bluegrass, HOE-22870 controlled crabgrass only at the high rate or when the low rate was reapplied
REFERENCE: Watschke, T.L., D.J. Wehner, and J.M. Duich, "Pre- and Postemergence Crabgrass Control in Turf," Proc. NE Weed Sci. Soc. 30:358-366 (1976).

<1073>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: A-820
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 micro M to 1.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplast and mung bean hypocotyl assays; evaluation time--up to 3 hr
EFFECTS: Strong inhibition of one or more cyclic or noncyclic photophosphorylation reactions, mitochondrial oxidation of varied substrates, and ATPase activity
COMMENTS: 2,6-dinitroanilines inhibited both electron transport and phosphorylation in isolated chloroplasts and mitochondria; interference with photoproduction of ATP chloroplasts evidenced by increased sensitivity of photophosphorylation over the coupled photoreduction to the 2,6-dinitroanilines when water served as electron donor, and by inhibition of photophosphorylation mediated by PMS in an argon atmosphere
REFERENCE: Moreland, D.E., F.S. Farmer, and G.G. Hussey, "Inhibition of Photosynthesis and Respiration by Substituted 2,6-Dinitroaniline Herbicides," Pest. Biochem. & Phys. 1:342-353 (1971).

<1074>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Butralin
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, creeping red (FESTUCA RUBRA); Crabgrass (DIGITARIA ISCHAEMUM); Goosegrass (ELEUSINE INDICA)
EXPERIMENTAL DOSE: 4, 5, 6, and 8 lb/A
APPLICATION METHODS: Preemergence granular treatments; hand application
EXPERIMENTAL CONDITIONS: Test 1--crabgrass control test on turf grasses, 4 x 5 ft plots, 3 replications, ratings on August 22, herbicides applied May 1; test 2--goosegrass control study in bluegrass, May 20 treatment and September 23 ratings, 5 x 5 plots, 6 replications
EFFECTS: Test 1--86 to 99% crabgrass control, minor turfgrass injury (greatest at 8 lb/A); test 2--98% goosegrass control at 5 lb/A
COMMENTS: Fescue, bentgrass, and bluegrass tabulated as turfgrass in test 1
REFERENCE: Coville, C.M. and J.A. Jagschitz, "Herbicides for Preemergence Crabgrass and Goosegrass Control in Turfgrass--1975," Proc. Northeast. Weed Sci. Soc. 30:367-371 (1976).

<1075>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: A-820
PLANT: Pepper, hot (CAPSICUM ANNUUM); Santa Maria (PARTHENIUM HYSTEROPHORUS); Nutsedge, purple (CYPERUS ROTUNDUS); (CLEOME CILIATA); (BOERHAVIA DIFFUSA); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); Pinkroot (SPIGELIA ANTHELMIA); Junglerice (ECHINOCHLOA COLONUM); Wiregrass (ELEUSINE INDICA); Sandbur (CENCHRUS ECHINATUS)
EXPERIMENTAL DOSE: 2 kg/ha
APPLICATION METHODS: Preplanting incorporated treatment
EXPERIMENTAL CONDITIONS: Seed bed trial; application 3 days before sowing
EFFECTS: Good control of most weeds; seedling emergence and early hot pepper growth damaged
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<1076>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: A-820
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 3.0, 6.0, and 9.0 lb/A; G and EC
APPLICATION METHODS: Preemergence broadcast spreader (G) and spray (WP); 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; established turf with seeding of crabgrass prior to herbicide applications
EFFECTS: Effective control of grass weeds at 6.0 lb/A with slight thinning of turf grasses
COMMENTS: A-820, CGA-10832, and BP-17623 experimental herbicides useful new preemergence herbicides in comparison with commercially available herbicides; two new aniline herbicides have some advantages
REFERENCE: Engel, R.E., C.W. Bussey, and R.D. Ilnicki, "Control of Crabgrass DIGITARIA Species and Goosegrass ELEUSINE INDICA in Turf with Experimental Preemergence Herbicides," Proc. Northeast. Weed Soc. 27:324-330 (1973).

<1077>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Dibutalin
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 2.2 kg/ha; EC
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Moderate control of weeds and reduced vigor in soybeans
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit futher testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<1078>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Dibutalin
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 2.2 kg/ha; EC and G
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Moderate control of weeds with little adverse effect on peanuts; G formulation slightly more active than EC
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit further testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<1079>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Butralin
PLANT: Plants; Bean, snap (PHASEOLUS VULGARIS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 1.5, 2.0, 2.5, and 3.0 lb/A
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Effective control of weeds with slight undefined effects on crop plants
COMMENTS: Profluralin safest on snapbeans and fluchloralin safest on lima beans of herbicides evaluated
REFERENCE: Ilnicki, R.D., D.J. Herman, and J. Somody, "Effects of Some Preplant Incorporated Herbicides on Weed Control in Snapbeans and Lima Beans," Proc. Northeast. Weed Sci. Soc. 29:197-198 (1975).

<1080>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Butralin
PLANT: Soybean (GLYCINE MAX); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Carpetweed (MOLLUGO VERTICILLATA); Chamomile, corn (ANTHEMIS ARVENSIS); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold sandy loam
EFFECTS: Effective control of pigweed and pamicum, moderate control of carpetweed and chamomile, and slight control of shepherd's purse with vigor reduction in soybean
COMMENTS: Most effective dinitroaniline herbicide was dinitroaniline which gave moderate to effective control of all weeds with no adverse effect on soybeans; vigor reduction by some herbicides did not affect yield
REFERENCE: Ilnicki, R.D., D.J. Herman and J. Somody, "The Response of Soybeans to Some Dinitroaniline Herbicides," Proc. Northeast. Weed Sci. Soc. 29:17-18 (1975).

<1081>
<1081>
CHEMICAL NAME: Benzenamine, 4-(1,1-dimethylethyl)-N-(1-methylpropyl)-2,6-dinitro-
CHEMICAL COMMON NAME: Butralin
PLANT: Broadleaf weeds; Grasses; Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Preplant incorporated (7 cm depth); preemergence and postemergence sprays; 208 l./ha; combined treatments
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: In preplant incorporated application, moderate control of weeds with slight phytotoxicity but no adverse effect on carrot yield
COMMENTS: Combination treatment consisting of trifluralin preplant incorporated followed by a postemergence application of linuron provided season long weed control; carrots tolerated postemergence applications of Hoe 23408 which selectively controlled annual grass weeds; combination of Hoe 23408 plus linuron resulted in more rapid weed kill than with either material alone
REFERENCE: Henne, R.C., "Chemical Weed Control in Carrots," Proc. Northeast Weed Sci. Soc. 31:238-243 (1977).

<1082>
CHEMICAL NAME: Benzenamine, 4-chloro-
CHEMICAL COMMON NAME: p-choroaniline
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 4.28 to 3.76 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<1083>
CHEMICAL NAME: Benzenamine, 4-methyl-2,6-dinitro-N,N-dipropyl-
CHEMICAL COMMON NAME: Dipropalin
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Oat (AVENA SATIVA); Soybean (GLYCINE MAX); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 8 lb/A
APPLICATION METHODS: 1961--preemergence on May 31 and postemergence on June 6; 1962--preemergence on March 19 and postemergence on July 27
EXPERIMENTAL CONDITIONS: 3-year study; randomized block design, twelve 2 X 30 ft plots with 3 replicates, silt loam soil; visual assessment of bluegrass on September 29; oat and soybean planted in soil collected March 1963 to study persistence of compound
EFFECTS: 79% crabgrass control; 80% bluegrass cover; residues caused soybean height reduction but little effect on oat; no significant increase in bluegrass root length
COMMENTS: Bluegrass root, measurements taken March 1963
REFERENCE: Singh, R.K.N. and R.W. Campbell, "Herbicides on Bluegrass," Weeds 13(2):170-171 (1965).

<1084>
CHEMICAL NAME: Benzenamine, 4,4'-thiobis-
CHEMICAL COMMON NAME: Aniline, p,p'-thiodi-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse phytotoxic effect
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1085>
CHEMICAL NAME: Benzenaminium, N,N,N,2-tetramethyl-5-(1-methylethyl)-4-[(1-piperidinylcarbonyl)oxy]-, chloride
CHEMICAL COMMON NAME: AMO-1618
PLANT: (STEVIA REBAUDIANA)
EXPERIMENTAL DOSE: 4000 ppm
APPLICATION METHODS: 20 ml. of solution in form of soil drench
EXPERIMENTAL CONDITIONS: 4 plants treated twice weekly with 16.6 microcuries carbon-labeled sodium acetate dissolved in 0.05% aqueous solution of 'Tween 20', application in 50 ul. drops, total of 250-microcuries given; 3 plants also received 20 ml. of AMO-1618 solution--application twice weekly 1 day before acetate treatment
EFFECTS: AMO-1618 suppressed biosynthesis of steviol; reduction in internode length also evident
COMMENTS: Steviol--responsible for sweet taste of leaves; gibberellic acid counteracted growth retardation; incorporation of acetate into steviol used to show biosynthetic inhibition
REFERENCE: Ruddat, M., "Inhibition of the Biosynthesis of Steviol by a Growth Retardant," Nature 211:971-972 (1966).

<1086>
CHEMICAL NAME: Benzenaminium,N,N,N,2-tetramethyl-5-(1-methylethyl)-4-[(1-piperidinylcarbonyl)ox y1]-, chloride
CHEMICAL COMMON NAME: AMO-1618
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<1087>
CHEMICAL NAME: Benzenaminium,N,N,N,2-tetramethyl-5-(1-methylethyl)-4-[(1-piperidinylcarbonyl)ox y1]-, chloride
CHEMICAL COMMON NAME: AMO-1618
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 1000, 2000, and 3000 ppm
APPLICATION METHODS: Postemergence--2 ml solution sprayed on each pot each week
EXPERIMENTAL CONDITIONS: Greenhouse study; effect on flowering studied
EFFECTS: No significant flower reduction
REFERENCE: Youngner, V.B. and J.P. Goodin, "Control of PENNISETUM CLANDESTINUM, Kikuyugrass," Weeds 9(2):238-242 (1961).

<1088>
CHEMICAL NAME: Benzene
CHEMICAL COMMON NAME: Benzene
PLANT: Sunflower (HELIANTHUS ANNUUS); Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Severe injury of leaf cells of sunflower and carrot; adding n-hexadecane reduced toxicity
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<1089>
CHEMICAL NAME: Benzene
CHEMICAL COMMON NAME: Benzene
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS); Parsnip (PASTINACA SATIVA)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) at 154 and 269x10(-5)M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other fractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<1090>
CHEMICAL NAME: Benzene, (1-methylethyl)-
CHEMICAL COMMON NAME: Isopropyl benzene
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS); Parsnip (PASTINACA SATIVA)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) at 17.1x10(-5)M for bean and no toxicity at saturation for parsnip
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other fractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<1091>
<1091>
CHEMICAL NAME: Benzene, (2-methylpropyl)-
CHEMICAL COMMON NAME: Isobutylbenzene
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Severe damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<1092>
CHEMICAL NAME: Benzene, (3,3,3-trichloro-1-methylenepropyl)-
CHEMICAL COMMON NAME: TCE-styrene
PLANT: Rice (ORYZA SATIVA) ; Grasses ; Broadleaf weeds ; Sedge (CYPERUS sp.)
EXPERIMENTAL DOSE: 0.40, 0.75, 1.00, 1.52, and 2.20 kg/ha
APPLICATION METHODS: Broadcast in rice paddies ; G formulation
EXPERIMENTAL CONDITIONS: Field study; soil--Maahas clay; 2 locations in Phillipines
EFFECTS: Effective control of grasses and sedges but no control of broadleafs with no adverse effect on rice yields at 1.0 lb/A
COMMENTS: Single application of grannular TCE-styrene broadcast directly in water can be an excellent method of grass control in transplanted rice; effective control of all weeds when used in combination with MCPA or 2,4-D
REFERENCE: De Datta, S.K., R.T. Bantilan, and J.K. Park, "Selective Control of Annual Grassy Weeds in Transplanted Tropical Rice with Alpha--2,2,2-Trichloroethyl Styrene," Nature 221:64-65 (1969).

<1093>
CHEMICAL NAME: Benzene, bis(1-methylethyl)-
CHEMICAL COMMON NAME: Diisopropylbenzenes
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: No toxicity to bean at saturation
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<1094>
CHEMICAL NAME: Benzene, dimethyl-
CHEMICAL COMMON NAME: Xylene
PLANT: Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 100, 200, and 500 ppm
APPLICATION METHODS: Solution addition to filter paper in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--75 F; evaluation time--48 hr; germinated seed selected and exposed
EFFECTS: Reduced growth at all concentrations; field study essentially corroborated results
COMMENTS: Phytotoxic effect of insecticide fertilizer mixtures attributed to fertilizer which interferred with uptake of water required by seed for germination, or to insecticide or solvent which may cause seedling damage; phorate and diazinon were more phytotoxic than Trithion or heptachlor in field and laboratory tests; insecticide solvent Velsicol AR-60 was more phytotoxic than xylene--depressed seedling emergence significantly in the field
REFERENCE: Allen, W.R., W.L. Askew, and K. Schreiber, "Effect of Insecticide Fertilizer Mixtures and Seed Treatments on Emergence of Sugar Beet Seedlings," J. Econ. Ent. 54(1):181-187 (1961).

<1095>
CHEMICAL NAME: Benzene, dimethyl-
CHEMICAL COMMON NAME: Xylene
PLANT: Pondweed, sago (POTOMOGETON PECTINATUS); Pondweed, American (POTOMOGETON NODOSUS); Pondweed, curly-leaf (POTOMOGETON CRISPUS); Pondweed (POTOMOGETON PERFOLIATUS); (CHARA VULGARIS); Naiad (NAJAS MINOR); (HYDRILLA VERTICILLATA); Hornwort (CERATOPHYLLUM DEMERSUM); Water celery (VALISNERIA SPIRALIS); Linseed (LINUM USITATISSIMUM); Mustard (BRASSICA CAMPESTRIS); Gram (CICER ARIETINUM); Clover, Egyptian (TRIFOLIUM ALEXANDRINUM); Coriander (CORIANDRUM SATIVUM); Wheat (TRITICUM AESTIVUM); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 700 ppm
APPLICATION METHODS: Injection into water for 30 min
EXPERIMENTAL CONDITIONS: Application in stagnant and flowing water, stagnant water--pH-7.6, air temp--21 C, water temp--18 C; flowing water--velocity 0.4 km/hr, pH-8.0; air temp--28 C; water temp--22 C; conductivity--0.3 mmhos/cm; evaluation time--one and 8 or 9 wk; treated water used to irrigate crop plots
EFFECTS: Poor to moderate to effective control of water weeds with no effect on crop plants

<1095> CONT.
COMMENTS: Of 5 herbicidal treatments employed, chlorothiamid, endothall and 2,4-D killed all submerged water weeds; all crop plants resistant to herbides except gram (susceptible to endothall, dipot.) and rice (susceptible to diuron)
REFERENCE: Dutta, T.R., J. Prasad, and R.P. Singh, "Evaluation of Herbicides for Submerged Weeds in Chambal and Bhakra-Nangal Canal Systems," Indian J. Agric. Sci. 42(1):70-75 (1972).

<1096>
CHEMICAL NAME: Benzene, dimethyl-
CHEMICAL COMMON NAME: Xylene
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 0.1 to 2.5%
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Bud injury
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:79-83 (1962).

<1097>
CHEMICAL NAME: Benzene, dimethyl-
CHEMICAL COMMON NAME: Xylene
PLANT: Pondweed, sago (POTOMOGETON PECTINATUS); Pondweed, American (POTOMOGETON NODOSUS)
EXPERIMENTAL DOSE: 3000 ppm
APPLICATION METHODS: Addition to water in which plants were growing; 0.5 hr contact time
EXPERIMENTAL CONDITIONS: Environmental chamber; temperatures--60, 70, and 80 F; light intensity--25 to 400 ft c; photoperiod--14 hr; cultured in 18 l. polyethylene buckets; evaluation time--2 wk
EFFECTS: Moderate injury of both pond weeds
COMMENTS: Pondweeds cultured at higher light intensities and higher temperatures progressively more injured; injury from treatment with either herbicide increased with age and plant maturity from early vegetative to flower-bud stage; exquivalent injury produced on plants of equivalent maturity regardless of chronological age
REFERENCE: Hodgson, R.H. and N.E. Otto, "Pondweed Growth and Response to Herbicides under Controlled Light and Temperature," Weeds 11(3):232-237 (1963).

<1098>
CHEMICAL NAME: Benzene, dimethyl-
CHEMICAL COMMON NAME: Xylene
PLANT: Petunia (PETUNIA sp.)
EXPERIMENTAL DOSE: 1000 ppm
APPLICATION METHODS: Added (spray) to agar medium disk to run-off
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--15 hr; pollen germinated and length of germination tube measured
EFFECTS: No adverse effect on germination or tube growth
COMMENTS: Germination of petunia and tomato pollen completely inhibited by topical applications of naled; reduction in germination and tube elongation of pollen caused by parathion, azinphosmethyl, difocol, endosulfan, dichlorvos, DDT, and gardona
REFERENCE: Gentile, A.G., K.J. Gallagher, and Z. Santner, "Effect of Some Formulated Insecticides on Pollen Germination in Tomato and Petunia," J. Econ. Ent. 64(4):916-919 (1971).

<1099>
CHEMICAL NAME: Benzene, ethyl-
CHEMICAL COMMON NAME: Ethyl benzene
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS); Parsnip (PASTINACA SATIVA)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) at 25.5 and 45.2x10(-5) M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other fractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<1100>
<1100>
CHEMICAL NAME: Benzene, ethyl-
CHEMICAL COMMON NAME: Ethyl benzene
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 0.1 to 2.5%
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Leaf and bud damage
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:78-83 (1962).

<1101>
CHEMICAL NAME: Benzene, iodo-
CHEMICAL COMMON NAME: Benzene, iodo-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Slight phytotoxic effect of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1102>
CHEMICAL NAME: Benzene, methyl-
CHEMICAL COMMON NAME: Toluene
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Severe damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<1103>
CHEMICAL NAME: Benzene, methyl-
CHEMICAL COMMON NAME: Toluene
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS); Parsnip (PASTINACA SATIVA)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) at 47.5 and 96.7x10(-5)M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other fractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<1104>
CHEMICAL NAME: Benzene, pentachloro-
CHEMICAL COMMON NAME: PCP
PLANT: Hibiscus (HIBISCUS ROSA); Guava (PSIDIUM GUAJAVA); Sorghum (SORGHUM BICOLOR); Cotton (GOSSIPIUM ARBOREUM)
EXPERIMENTAL DOSE: 0.3 to 7,560 micro g/leaf
APPLICATION METHODS: Applied as droplets to leaves with micropipette
EXPERIMENTAL CONDITIONS: Field study (hibiscus and guava); greenhouse study (sorghum and cotton)
EFFECTS: Leaf kill at 1.2 to 315 micro g/leaf within 7 days
COMMENTS: Pentachlorophenol and AP-20 produced most rapid desiccation at high dosages; usually as effective as PCP and AP-20 within 1 to 2 days after treatment, and produced more extensive desiccation at lower dosages, especially on hibiscus, sorghum, and cotton; diquat, paraquat, cacodylic acid, and AP-20 produced complete defloiation of hibiscus within 5 days after treatment but diquat and paraquat were more effective at lower dosages than other defoliants; diquat completely defoliated hibiscus regardless of placement on leaf, but higher dosages required for effective desiccation when applied non-uniformly over leaf
REFERENCE: Bovey, R.W. and F.R. Miller, "Desiccation and Defoliation of Plants by Different Herbicides and Mixtures," Agron. J. 60(1):700-702 (1968).

<1105>
CHEMICAL NAME: Benzene, pentachloro-
CHEMICAL COMMON NAME: PCP
PLANT: Azalea (RHODODENDRON INDICUM); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 20.0 to 40.0 lb/A; vermiculite carrier
APPLICATION METHODS: Broadcast
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control at highest rates with no adverse effect on azalea
COMMENTS: PCP, DN, and CIPC superior at high rates against summer weeds in azalea beds, whereas fall weeds best controlled by CIPC, diuron, Geigy 444, and CDEC, no apparent foliar or other damage resulted from any treatments
REFERENCE: Chappell, W.E., "The Use of Granular Herbicides in Azaleas," Proc. Southern Weed Conf. 10:105-107 (1957).

<1106>
CHEMICAL NAME: Benzene, pentachloronitro-
CHEMICAL COMMON NAME: Folosan
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 3.5 oz
APPLICATION METHODS: Dust added to stored potatoes
EXPERIMENTAL CONDITIONS: Storage study; tuber buried with straw and covered ith soil to overwinter
EFFECTS: Suppressed tuber sprout growth with no adverse effect subsequently on yield
COMMENTS: Addition of pentachloronitrobenzene to certain potato varieties had marked effect in reducing amount of sprouting which takes place over winter in protecting sprouts from damage by RHIZOCTONIA SOLANI; tetrachloronitrobenzene applied to potatoes kept in closed space repressed sprouting to very pronounced degree
REFERENCE: Brown, W., "Experiments on the Effect of Chlorinated Nitrobenzenes on the Sprouting of Potato Tubers," Ann. Appl. Biol. 34:422-429 (1947).

<1107>
CHEMICAL NAME: Benzene, pentachloronitro-
CHEMICAL COMMON NAME: Brassicol
PLANT: Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 60 mg/100 g seed
APPLICATION METHODS: Applied to seed inoculated with RHIZOBIUM
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; evaluated at flowering stage
EFFECTS: Reduced nodulation and growth
COMMENTS: Seed disinfection had beneficial effect on stand of crop; fungicidal treatment had some adverse effect on nodulation and dry weight of plants; combinations always superior over control i.e. where neither inoculant nor fungicide applied
REFERENCE: Mukewar, P.M. and V.P. Bhide, "Effect of Seed Treatment With Fungicides and Antibiotic Aureofungin on Nodulation by RHIZOBIUM in Groundnut," Hindustan Antibiotics Bull. 12(2):75-80 (1970).

<1108>
CHEMICAL NAME: Benzene, tetrachloronitro-
CHEMICAL COMMON NAME: DB905
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 3.5 oz
APPLICATION METHODS: Dust added to stored potatoes
EXPERIMENTAL CONDITIONS: Storage study; tuber buried with straw and covered ith soil to overwinter
EFFECTS: Nearly complete suppression of tuber sprouting with an adverse effect on potato yield
COMMENTS: Addition of pentachloronitrobenzene to certain potato varieties had marked effect in reducing amount of sprouting which takes place over winter in protecting sprouts from damage by RHIZOCTONIA SOLANI; tetrachloronitrobenzene applied to potatoes kept in closed space repressed sprouting to very pronounced degree
REFERENCE: Brown, W., "Experiments on the Effect of Chlorinated Nitrobenzenes on the Sprouting of Potato Tubers," Ann. Appl. Biol. 34:422-429 (1947).

<1109>
CHEMICAL NAME: Benzene, 1-chloro-2-methyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1110>
CHEMICAL NAME: Benzene, 1-chloro-2-nitro-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control

<1110>
<1110> CONT.
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1111>
CHEMICAL NAME: Benzene, 1-chloro-4-[[(4-chlorophenyl)methyl]thio]-
CHEMICAL COMMON NAME: Chlorbenside
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 1.33 kg/ha
APPLICATION METHODS: Spray application monthly
EXPERIMENTAL CONDITIONS: 2.7x6.4 m plots, randomized block design with 4 replications; Frilsham Series soil (brown earth in loamy drift over chalky head); 5-year experiment, 1969-1973; yield measurements from center of each plot; 377 kg/ha N per year as fertilizer; irrigation when soil moisture deficit reached 25 mm
EFFECTS: No injury--yields same or greater than control
COMMENTS: Chlorbenside--insecticide
REFERENCE: Henderson, I.F. and R.O. Clements, "The Effect of Pesticides on the Yield and Botanical Composition of a Newly-Sown Ryegrass Ley and of an Old Mixed Pasture," J. Br. Grassl. Soc. 29:185-190 (1974).

<1112>
CHEMICAL NAME: Benzene, 1-chloro-4-methyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1113>
CHEMICAL NAME: Benzene, 1-chloro-4[[(4-chlorophenyl) methyl]thio]-
CHEMICAL COMMON NAME: Chlorbenside
PLANT: Currant, black (RIBES NIGRUM); Plum (PRUNUS sp.)
EXPERIMENTAL DOSE: 0.1 and 0.5%
APPLICATION METHODS: Sprayed to runoff; WP formulation for plum tree treatments; 0.1% for black current test and 0.5% for plum tests
EXPERIMENTAL CONDITIONS: Black current--5 year old bushes, once a year treatment at grape stage, 3 replicates for each variety, 3 season study; plum--20 plots with 6 trees of each variety per plot, 3 season study, 2 application times tested (mid-May and June)
EFFECTS: No injury
REFERENCE: Kirby, A.H.M. and M. Bennett, "Phytotoxicity Trials with Acaricides on Black Currant and Plum," Rep. E. Malling Res. Sta. 152-154 (1958).

<1114>
CHEMICAL NAME: Benzene, 1-chloro-4[[(4-chlorophenyl) methyl]thio]-
CHEMICAL COMMON NAME: Chlorbenside
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 40% WP formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Slight browning of leaves at 0.25% concentration; no growth effects
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<1115>
CHEMICAL NAME: Benzene, 1-chloro-4[[(4-chlorophenyl) methyl]thio]-
CHEMICAL COMMON NAME: Chlorbenside
PLANT: Plum (PRUNUS DOMESTICA); Currant, black
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Foliar spray; 100 and 200 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; time period--1953 to 1955
EFFECTS: No adverse effects on either variety
COMMENTS: Some marginal scorch developed on black currant leaves sprayed with lime-sulphur but no leaf damage was seen on any bushes; no influence on blossom or fruit-set detected
REFERENCE: Kirby, A.H.M. and M. Bennett, "Phytotoxicity Trials with Acaricides on Black Currant and Plum," Rep. E. Malling Res. Sta. 152-154(1958).

<1116>
CHEMICAL NAME: Benzene, 1-chloro-4[[(4-chlorophenyl) methyl]thio]-
CHEMICAL COMMON NAME: Chlorbenside
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 fl oz/100 gal
APPLICATION METHODS: Postemergence spray--normal dosage rate of 0.012% active ingredient; miscible formulation
EXPERIMENTAL CONDITIONS: Greenhouse grown cucumbers; 3 replications; spray treatments of once, twice, and five times normal dosage
EFFECTS: Twice and five times normal dosage caused slight edge scorch, chlorosis also developed
COMMENTS: Technical commercially produced grades of chemicals used
REFERENCE: Dennis, E.B. and C.A. Edwards,"Phytotoxicity of Insecticides and Acaricides," Plant Pathol. 10(2):54-60 (1961).

<1117>
CHEMICAL NAME: Benzene, 1,1'-(1,2-ethenediyl)bis-[2,4-dinitro-3',4'-[methylenebis(oxy)]-
CHEMICAL COMMON NAME: Stilbene, 2,4-dinitro-3',4'-methylenedioxy-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Slight phytotoxic effect of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1118>
CHEMICAL NAME: Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-
CHEMICAL COMMON NAME: TDE
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.6 lb/A
APPLICATION METHODS: Postemergence spray for insect control; 10 gal/A; 3X applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted
COMMENTS: Spray injury generally more severe with accumulative applications; most severe with oil soluble formulation of DDT for all dates and accumulative applications, and for dilan and BHC with single applications
REFERENCE: Probst, A. H. and R. T. Everly, "Effect of Foliage Insecticides on Growth, Yield and Chemical Composition of Soybeans," Agron. J. 49:577-581 (1957).

<1119>
CHEMICAL NAME: Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-
CHEMICAL COMMON NAME: Dilan
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.6 lb/A
APPLICATION METHODS: Postemergence spray for insect control; 10 gal/A; 3X applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate foliage injury but no adverse effect on soybean yield
COMMENTS: Spray injury generally more severe with accumulative applications; most severe with oil soluble formulation of DDT for all dates and accumulative applications, and for dilan and BHC with single applications
REFERENCE: Probst, A. H. and R. T. Everly, "Effect of Foliage Insecticides on Growth, Yield and Chemical Composition of Soybeans," Agron. J. 49:577-581 (1957).

<1120>
<1120>
CHEMICAL NAME: Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-
CHEMICAL COMMON NAME: TDE
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 46.0 lb/A; dust
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Severe leaf damage
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:78-83 (1962).

<1121>
CHEMICAL NAME: Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-
CHEMICAL COMMON NAME: TDE
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 12.5, 50.0, and 100.0 ppm
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Arredondo loamy fine sand; pot culture
EFFECTS: No adverse effect on germination but reduced root or shoot growth at high rates
COMMENTS: BHC decreased germination; all other insecticides increased germination or had no effect; root and top weights decreased by chlordane, lindane, aldrin, dieldrin, TDE, DDT and BHC; top weights reduced by methoxychlor; heptachlor and toxaphene had no effect on growth
REFERENCE: Eno, C.F. and P.H. Everett, "Effects of Soil Applications of 10 Chlorinated Hydrocarbon Insecticides on Soil Microorganisms and the Growth of Stringless Black Valentine Beans," Soil Sci. Soc. Am. Proc. 22:235-238 (1958).

<1122>
CHEMICAL NAME: Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-ethyl-
CHEMICAL COMMON NAME: Perthane
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight leaf damage and no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1382 (1972).

<1123>
CHEMICAL NAME: Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
CHEMICAL COMMON NAME: DDT
PLANT: Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 to 1000 ppm
APPLICATION METHODS: Addition to soil in which inoculated seed were planted
EXPERIMENTAL CONDITIONS: Evaluation time--4 and 7 wk
EFFECTS: No adverse effect on nodulation with increased leghemoglobin content
COMMENTS: Insecticide up to 40 ppm not toxic to leghemoglobin content of nodules of crop; DDT at level of 1, 5 and 10 ppm increased leghemoglobin content; increases over control with above concentrations were 12.2, 37.2 and 27.2% in the first and 59.7, 57.9 and 30.5% in second uprooting, respectively
REFERENCE: Gaur, A.C. and R.P. Pareek, "Effect of Dichloro Diphenyl Trichloro-Ethane (DDT) on Legthemoglobin Content of Root Nodules of PHASEOLUS AUREUS (Green Gram)," Experientia 25:777 (1969).

<1124>
CHEMICAL NAME: Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
CHEMICAL COMMON NAME: DDT
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Strongly reduced photosynthesis in susceptible variety with less effect on resistant variety
COMMENTS: Four days after spraying plants with DDT, chloroplasts isolated from susceptible barley showed only about 25 per cent of Hill activity
REFERENCE: Lawler, P.D. and L.J. Rogers, "Effect of DDT on Photosynthesis in Certain Varieties of Barley," Nature 215:1515-1516 (1967).

<1125>
CHEMICAL NAME: Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
CHEMICAL COMMON NAME: DDT
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.7, 2.5 and 3.6 lb/A
APPLICATION METHODS: Postemergence spray for insect control; 10 gal/A; 3X applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight foliage injury at highest rate with no adverse effect on soybean yield

<1125> CONT.
COMMENTS: Spray injury generally more severe with accumulative applications; most severe with oil soluble formulation of DDT for all dates and accumulative applications, and for dilan and BHC with single applications
REFERENCE: Probst, A. H. and R. T. Everly, "Effect of Foliage Insecticides on Growth, Yield and Chemical Composition of Soybeans," Agron. J. 49:577-581 (1957).

<1126>
CHEMICAL NAME: Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
CHEMICAL COMMON NAME: DDT
PLANT: Cabbage, Chinese (BRASSICA PEKINENSIS)
EXPERIMENTAL DOSE: 1.0 kg/ha
APPLICATION METHODS: Insecticidal spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; pollen collected at various times after application; evaluation time--6 hr to 21 da
EFFECTS: Significant pollen sterility for 1 to 14 days
COMMENTS: Most insecticides affected pollen viability only for first 4-5 days, except a few which affected it even up to 12 or 15 days
REFERENCE: Lal, O.P., "Insecticidal Sprayings Causing Pollen Sterility in Chinese Cabbage," Act. Agron. Acad. Scient. Hungar. 24:145-147 (1975).

<1127>
CHEMICAL NAME: Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
CHEMICAL COMMON NAME: DDT
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 5, 10, 20, 30, 40, and 50 ppm
APPLICATION METHODS: Pesticide dissolved in 25 ml acetone and diluted in water to give 5 ppm in 10 kg soil portion--treatment to give desired concentration
EXPERIMENTAL CONDITIONS: Greenhouse and laboratory study; 3 seed lots--high, medium, and low vigor; 200 seeds of each species of each vigor level planted in soil containing pesticide in 4 replicates; seedling emergence, height, and dry weight recorded; low temperature study in laboratory
EFFECTS: Pesticide residues alone, no significant effects; pesticide residue in combination with reduced vigor seeds resulted in reduced seedling height, dry weight, and germination energy; low temperatures also influence growth--50 ppm pesticide with low temperatures (13 C) caused 34 to 41% seedling reduction in low vigor cotton seeds, less in wheat seeds
COMMENTS: Reduction in seedling characteristics linearly related to increasing pesticide concentration and decreasing seed vigor; seed vigor reduction achieved by heating at 40 C; seed vigor is very important determining growth factor; different kinds of seeds respond differently
REFERENCE: Rajanna, B. and A.A. de la Cruz, "Stand Establishment and Early Growth of Field Crops as Influenced by Seed Vigor and Pesticide Residues," Seed. Sci. Technol. 5:71-85 (1977).

<1128>
CHEMICAL NAME: Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
CHEMICAL COMMON NAME: DDT
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 3%; aerosol and tech grades
APPLICATION METHODS: Dust; 30 lb/A
EXPERIMENTAL CONDITIONS: Field study; 4 or 8 applications beginning with plant emergence
EFFECTS: Reduced growth and foliage damage
COMMENTS: Four applications of dusts of lindane, rotenone, methoxychlor, nicotine, calcium arsenate-talc, calcium arsenate-COCS, or COCS-talc neutral in effect on cucumber; four applications of dusts of DDT caused severe stunting of vines and markedly reduced yields
REFERENCE: Harcourt, D.G. and L.M. Cass, "Toxicities of Various Insecticides to Cucumber," Cand. J. Agr. Sci. 35:19-26 (1955).

<1129>
CHEMICAL NAME: Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
CHEMICAL COMMON NAME: DDT
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 12.5, 50.0, and 100.0 ppm
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Arredondo loamy fine sand; pot culture
EFFECTS: No adverse effect on germination but reduced root or shoot growth at high rates
COMMENTS: BHC decreased germination; all other insecticides increased germination or had no effect; root and top weights decreased by chlordane, lindane, aldrin, dieldrin, TDE, DDT and BHC; top weights reduced by methoxychlor; heptachlor and toxaphene had no effect on growth
REFERENCE: Eno, C.F. and P.H. Everett, "Effects of Soil Applications of 10 Chlorinated Hydrocarbon Insecticides on Soil Microorganisms and the Growth of Stringless Black Valentine Beans," Soil Sci. Soc. Am. Proc. 22:235-238 (1958).

<1130>
CHEMICAL NAME: Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
CHEMICAL COMMON NAME: DDT
PLANT: Barley (HORDEUM VULGARE); Alfalfa (MEDICAGO SATIVA); Ryegrass, perennial (LOLIUM PERENNE); Flax (LINUM USITATISSIMUM); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 10 g/one qt seed; 5% DDT formulation
APPLICATION METHODS: Added to seed stored in open or closed glass jars
EXPERIMENTAL CONDITIONS: Laboratory study; time period--1957 to 1963; seed stored in ambient conditions (temperature and humidity) inside storage building
EFFECTS: In closed containers, slight reduction in germination of barley and cotton seed, severe germination

<1130>
<1130> CONT.
reduction of flax seed (after 7 yr), and no reduction in germination of alfalfa or ryegrass seed
COMMENTS: Open containers more satisfactory than closed when paradichlorobenzene and naphthalene used as seed-storage chemicals; DDT reduced seed viability the least; Ceresan M convenient to use, but decreased germination; naphthalene did not decrease seed viability as rapidly as paradichlorobenzene, which decreased germination faster than other chemicals
REFERENCE: Day, A.D. and P.K. Thompson, "Some Effects of Paradichlorobenzene, Naphthalene, DDT and Ceresan on the Germination of Field Crop Seeds," J. Agron. 57(1):321-322 (1965).

<1131>
CHEMICAL NAME: Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-
CHEMICAL COMMON NAME: Methoxychlor
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.6 lb/A
APPLICATION METHODS: Postemergence spray for insect control; 10 gal/A; 3X applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight damage to foliage but no adverse effect on soybean yeild
COMMENTS: Spray injury generally more severe with accumulative applications; most severe with oil soluble formulation of DDT for all dates and accumulative applications, and for dilan and BHC with single applications
REFERENCE: Probst, A. H. and R. T. Everly, "Effect of Foliage Insecticides on Growth, Yield and Chemical Composition of Soybeans," Agron. J. 49:577-581 (1957).

<1132>
CHEMICAL NAME: Benzene, 1,1'-(2,2,2-trichloroethylidine)bis[4-methoxy-
CHEMICAL COMMON NAME: Methoxychlor
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 3.0%
APPLICATION METHODS: Dust; 30 lb/A
EXPERIMENTAL CONDITIONS: Field study; 4 or 8 applications beginning with plant emergence
EFFECTS: No adverse effect on growth but slight burning of foliage
COMMENTS: Four applications of dusts of lindane, rotenone, methoxychlor, nicotine, calcium arsenate-tale, calcium arsenate-COCS, or COCS-talc neutral in effect on cucumber; four applications of dusts of DDT caused severe stunting of vines and markedly reduced yields
REFERENCE: Harcourt, D.G. and L.M. Cass, "Toxicities of Various Insecticides to Cucumber," Cand. J. Agr. Sci. 35:19-26 (1955).

<1133>
CHEMICAL NAME: Benzene, 1,1'-(2,2,2-trichloroethylidine)bis[4-methoxy-
CHEMICAL COMMON NAME: Methoxychlor
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 12.5, 50.0, and 100.0 ppm
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Arredondo loamy fine sand; pot culture
EFFECTS: No adverse effect on germination but reduced root or shoot growth at high rates
COMMENTS: BHC decreased germination; all other insecticides increased germination or had no effect; root and top weights decreased by chlordane, lindane, aldrin, dieldrin, TDE, DDT and BHC; top weights reduced by methoxychlor; heptachlor and toxaphene had no effect on growth
REFERENCE: Eno, C.F. and P.H. Everett, "Effects of Soil Applications of 10 Chlorinated Hydrocarbon Insecticides on Soil Microorganisms and the Growth of Stringless Black Valentine Beans," Soil Sci. Soc. Am. Proc. 22:235-238 (1958).

<1134>
CHEMICAL NAME: Benzene, 1,1'-sulfonylbis-
CHEMICAL COMMON NAME: Diphenyl sulfone
PLANT: Plum (PRUNUS DOMESTICA); Currant, black
EXPERIMENTAL DOSE: 0.2%
APPLICATION METHODS: Foliar spray; 100 and 200 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; time period--1953 to 1955
EFFECTS: No adverse effects on either variety
COMMENTS: Some marginal scorch developed on black currant leaves sprayed with lime-sulphur but no leaf damage was seen on any bushes; no influence on blossom or fruit-set detected
REFERENCE: Kirby, A.H.M. and M. Bennett, "Phytotoxicity Trials with Acaricides on Black Currant and Plum," Rep. E. Malling Res. Sta. 152-154(1958).

<1135>
CHEMICAL NAME: Benzene, 1,2-dichloro-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.5%
APPLICATION METHODS: Addition to soil as sterilant
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--55 F; evaluation time--7 wk
EFFECTS: Growth reduction and leaf abnormalities
COMMENTS: With any treatment containing orthodichlorobenzene, growth of plants affected and characteristic leaf distortion developed while other treatments produced normal plants; ingredient in proprietary sterilizer responsible for harmful effect on tomato plants was orthodichlorobenzene; other ingredients harmless
REFERENCE: Western, J.H. and R. Stewart, "The Effect of a Chemical Soil Sterilizing Agent on the Subsequent Development of Tomato Plants," Ann. Appl. Biol. 30(4):370-372 (1943).

<1136>
CHEMICAL NAME: Benzene, 1,2-dichloro-4-methyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1137>
CHEMICAL NAME: Benzene, 1,2-dimethyl-
CHEMICAL COMMON NAME: o-xylene
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indicator of phytoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Severe damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<1138>
CHEMICAL NAME: Benzene, 1,2-dimethyl-
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS); Parsnip (PASTINACA SATIVA)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) at 18.4 and 27.6x10(-5)M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other fractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<1139>
CHEMICAL NAME: Benzene, 1,2-dimethyl-
CHEMICAL COMMON NAME: o-xylene
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 0.1 to 2.5%
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Leaf and bud damage
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:78-83 (1962).

<1140>
CHEMICAL NAME: Benzene, 1,2,4-trichloro-5-[(4-chlorophenyl)sulfonyl]-
CHEMICAL COMMON NAME: Tedion
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 1 and 2 qt/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: 1 qt/100 gal caused foliage injury to schefflera in test 1 but not in test 2; 1 and 2 qt/100 gal in test 2 caused no toxicity to any species
COMMENTS: 1% EC formulation; tedion also known as tetradifon in Great Britain
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<1141>
<1141>
CHEMICAL NAME: Benzene, 1,2,4-trichloro-5-[(4-chlorophenyl)sulfonyl]-
CHEMICAL COMMON NAME: Tedion
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 1 and 2 qt/100 gal--based upon concentration of formulation per 100 gal water
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: 1 qt/100 gal caused foliage injury to schefflera in test 1 but not in test 2; 1 and 2 qt/100 gal in test 2 caused no toxicity to any species
COMMENTS: 1% EC formulation; tedion also known as tetradifon in Great Britain
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<1142>
CHEMICAL NAME: Benzene, 1,2,4-trichloro-5-[(4-chlorophenyl)sulfonyl]-
CHEMICAL COMMON NAME: Tetradifon
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% WP formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No injury
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and P.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<1143>
CHEMICAL NAME: Benzene, 1,2,4-trichloro-5-[(4-chlorophenyl)sulfonyl]-
CHEMICAL COMMON NAME: Tetradifon
PLANT: Cineraria; Coleus (COLEUS BLUMEI); Violet (VIOLA sp.)
EXPERIMENTAL DOSE: 25 fl oz/100 gal
APPLICATION METHODS: Foliage sprays at normal, twice, and five times normal dosages with equivalent amount of wetting agent; 0.03% active ingredient
EXPERIMENTAL CONDITIONS: Greenhouse and field study; treatments replicated 3 times; plants sprayed til leaves thoroughly drenched
EFFECTS: Cineraria--slight edge scorch and chlorosis at 0.03% active ingredient; coleus--speckle of leaf edge and lamina, patchy scorch with some interveinal discoloration at 0.15% active ingredient; violet--necrotic patches on lamina and leaf edges
COMMENTS: Normal spray dosage--0.03% active ingredient and 25 fl oz/100 gal; tetradifon also known as tedion; values under effects are minimum phytotoxic dosages
REFERENCE: Dennis, E.B. and C.A. Edwards, "Phytotoxicity of Insecticides and Acaricides II. Flowers and Ornamentals," Plant Pathol. 12:27-36 (1963).

<1144>
CHEMICAL NAME: Benzene, 1,2,4-trimethyl-
CHEMICAL COMMON NAME: Pseudocumene
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) for bean at 10.4×10^{-5} M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<1145>
CHEMICAL NAME: Benzene, 1,2,4,5-tetrachloro-
CHEMICAL COMMON NAME: TCB
PLANT: Cinquefoil (POTENTILLA sp.); Barley (HORDEUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1.7 to 135.0 lb/A
APPLICATION METHODS: Added to soil; preplant incorporated
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture in sand, sandy loam, clay loam, and clay
EFFECTS: Decreased germination and growth in height at all application rates when seeds planted one day after application; 25 day-interval between application and planting was minimal time for normal germination and growth at lowest rates
COMMENTS: TCB decreased germination percentage and seedling vigor of barley, oats, and wheat in four soil types; detrimental effects of TCB most serious in sandy soil; as the soil type changed from sand, to sandy loam and clay loam, to clay, the damage produced by TCB decreased
REFERENCE: Ameen, O.A., A.D. Day, and K.C. Hamilton, "Effect of 1,2,4,5-Tetrachlorobenzene on the Germination and Seedling Vigor of Barley, Oats, and Wheat," J. Agron. 52(1):87-89 (1960).

<1146>
CHEMICAL NAME: Benzene, 1,3-diethyl-
CHEMICAL COMMON NAME: Meta-diethyl benzene
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: No toxicity to bean at saturation
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<1147>
CHEMICAL NAME: Benzene, 1,3-dimethyl-
CHEMICAL COMMON NAME: M-xylene
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 0.1 to 2.5%
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Leaf and bud damage
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:78-83 (1962).

<1148>
CHEMICAL NAME: Benzene, 1,3,5-trichloro-2-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: CNP
PLANT: Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Cudweed, low (GNAPHALIUM ULIGONOSA); Broccoli (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Cabbage (BRASSICA OLERACEA); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 2.2 and 4.5 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; 5 year period
EFFECTS: Moderate control of weeds at both rates (one trial only) and no damage to vegetables except cauliflower at both rates in postemergence application
COMMENTS: Trifluralin, DCPA, and nitrofen gave eratic weed control and must be applied at highest rates of application permitted by label for even average weed control in most years; two new herbicides pryanchlor and DMC 3950 show promise for use on cole crops in Eastern Canada
REFERENCE: Ivany, J.A. and J.A. Cutcliffe, "Herbicides for Cole Crops in Eastern Canada," Proc. Northeast. Weed Sci. Soc. 27:194-198 (1973).

<1149>
CHEMICAL NAME: Benzene, 1,3,5-trichloro-2-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: MO 338
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 2 and 6 kg/ha
APPLICATION METHODS: Postemergence spray at volume of 352 l./ha and pressure of 2.1 kg/cm (2); 20% EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse study; plants watered from above before spraying and from below after spraying; 2 replications; visual assessments at intervals, dry weights determined 8 weeks after spraying
EFFECTS: Necrotic spots on youngest expanded leaves soon after spraying; no injury to other leaves; significant reduction in dry weight at 6 kg/ha compared with control
COMMENTS: Another experiment showed similar results
REFERENCE: Clay, D.V., "The Response of Strawberry to a Range of Foliage Acting Herbicides," Proc. Brit. Weed Control Conf. 11:409-416 (1972).

<1150>
CHEMICAL NAME: Benzene, 1,3,5-trichloro-2-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: MO 338
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 500 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Promoted tuber sprouting
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<1151>
<1151>
CHEMICAL NAME: Benzene, 1,3,5-trichloro-2-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: CNP
PLANT: Broadleaf weeds; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 2.69 kg/ha
APPLICATION METHODS: Pre-plant incorporated, preemergence, or postemergence sprays; 280 l./ha at 2 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1972 and 1973
EFFECTS: Effective weed control but reduced yield of beet
COMMENTS: Broadleaf weed control achieved in table beets with cycloate, CNP, pebulate, lenacil, pyrazon, IMC 3950, TCA + pyrazon, and pebulate followed by pyrazone; fair weed control achieved with EPTC, propachlor, and solubor; poor weed control obtained from CDEC, chlorpropham, pyrazon, and TCA; yields expressed as $/ha or tons/ha reduced by chlorpropham, lenacil, CNP, and TCA
REFERENCE: Phatak, S.C. and D.J. Cantliffe, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Table Beets," Hortsci. 10(3):271-273 (1975).

<1152>
CHEMICAL NAME: Benzene, 1,3,5-trimethyl-
CHEMICAL COMMON NAME: Mesitylene
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS); Parsnip (PASTINACA SATIVA)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) for bean at 12.7x10(-5)M and no toxicity at saturation on parsnip
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<1153>
CHEMICAL NAME: Benzene, 1,4-dichloro-
PLANT: Barley (HORDEUM VULGARE); Alfalfa (MEDICAGO SATIVA); Ryegrass, perennial (LOLIUM PERENNE); Flax (LINUM USITATISSIMUM); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 25 g/one qt seed
APPLICATION METHODS: Added to seed stored in open or closed glass jars
EXPERIMENTAL CONDITIONS: Laboratory study; time period--1957 to 1963; seed stored in ambient condition (temperature and humidity) inside storage building
EFFECTS: In closed jars, moderate (alfalfa and ryegrass) reduction and severe or total reduction in germination of barley, flax, and cotton seed
COMMENTS: Open containers more satisfactory than closed when paradichlorobenzene and naphthalene used as seed-storage chemicals; DDT reduced seed viability the least; Ceresan M convenient to use, but decreased germination; naphthalene did not decrease seed viability as rapidly as paradichlorobenzene, which decreased germination faster than other chemicals
REFERENCE: Day, A.D. and R.K. Thompson, "Some Effects of Paradichlorobenzene, Naphthalene, DDT and Ceresan on the Germination of Field Crop Seeds," J. Agron. 57(1):321-322 (1965).

<1154>
CHEMICAL NAME: Benzene, 1,4-dichloro-
PLANT: Violets, white (VIOLA sp.); Cranberry, American (VACCINIUM MACROCARPON)
EXPERIMENTAL DOSE: 600 lb/A
APPLICATION METHODS: Early May treatment, application by fertilizer spreader
EXPERIMENTAL CONDITIONS: Field trials in cranberry bogs
EFFECTS: White violets controlled, no injury to cranberry vines
COMMENTS: Several inorganic compounds tested but paradichlorobenzene was more promising
REFERENCE: Cross, C.E., "Control of Cranberry Bog Weeds," Cranberries 5(9):7-8(1941).

<1155>
CHEMICAL NAME: Benzene, 1,4-dimethyl-
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS); Parsnip (PASTINACA SATIVA)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) at 22.9 and 37.7x10(-5)M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other fractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<1156>
CHEMICAL NAME: Benzene, 1,4-dimethyl-
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 0.1 to 2.5%
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Leaf and bud damage
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:78-83 (1962).

<1157>
CHEMICAL NAME: Benzene, 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: RH-2915
PLANT: Soybean (GLYCINE MAX); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.25 and 0.5 lb/A; EC
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold loam; soybeans planted with no tillage in wheat stubble; evaluation time--1 mo; soybeans planted one day before herbicide applications
EFFECTS: At 0.5 lb/A, moderate control of weeds with slight vigor reduction in soybeans
COMMENTS: Only paraquat and glyphosate applied alone gave good weed control; Paraquat and metribuzin reduced soybean stands but not seriously; alachlor and penoxalin did not control panicum; penoxalin or linuron in combination with glyphosate or paraquat improved control of many weed species over penoxalin and linuron applied alone; combinations of the two with either of the contact herbicides (3-way combinations) did not improve degree of control effected by single herbicides applied with paraquat or glyphosate; combinations of RH-2915 and alachlor did not improve weed control over either herbicide applied alone; considerable improvement resulted when glyphosate or paraquat added to the combination
REFERENCE: Michieka, R.W., R.D. Ilnicki, and J.R. Justin, "Weed Control in Double-Crop Soybeans with Herbicides Applied Alone and in Combination with Paraquat or Glyphosate," Proc. Northeast. Weed Sci. Soc. 31:61-69 (1977).

<1158>
CHEMICAL NAME: Benzene, 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: RH-2915
PLANT: Soybean (GLYCINE MAX); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Lamb's-quarters (CHENOPODIUM ALBUM); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 0.125, 0.250, and 0.500 lb/A, 2% EC
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Bucks silt loam
EFFECTS: At 0.25 lb/A, effective weed control except panicum (moderate control) with slight early soybean injury but no adverse effect on yield
COMMENTS: RH-2512 preemergence provided excellent control of large crabgrass, fall panicum, common lambsquarters, redroot pigweed, and smallflower galinsoga; RH-2915 preemergence provided weed control equivalent to RH-2512
REFERENCE: Hartnett, J.P., "Weed Control in Soybeans with RH-2512 and RH-2915," Proc. Northeast. Weed Sci. Soc. 29:4-8 (1975).

<1159>
CHEMICAL NAME: Benzene, 2-chloro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: RH-2512
PLANT: Soybean (GLYCINE MAX); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Lamb's-quarters (CHENOPODIUM ALBUM); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 0.5, 0.75, 1.0, and 1.5 lb/A, 2% EC
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Bucks silt loam
EFFECTS: Effective control of weeds at 0.75 lb/A with slight adverse effect on soybean but no adverse effect on yield
COMMENTS: RH-2512 preemergence provided excellent control of large crabgrass, fall panicum, common lambsquarters, redroot pigweed, and smallflower galinsoga; RH-2915 preemergence provided weed control equivalent to RH-2512
REFERENCE: Hartnett, J.P., "Weed Control in Soybeans with RH-2512 and RH-2915," Proc. Northeast. Weed Sci. Soc. 29:4-8 (1975).

<1160>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodifen
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, Kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 2.0 and 3.0 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Effective control of weeds in preemergence application; unspecified effect on beans
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave

<1160>
<1160> CONT.
excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<1161>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodiphen
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, large (DIGITARIA SANGUINALIS); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 2.24, 3.36, and 4.48 kg/ha
APPLICATION METHODS: Preemergence spray; 500 l./ha; EC formulation
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras sandy loam; pH--5.5; time period--1972 and 1973
EFFECTS: Effective control of all weeds with slight initial injury to snap bean but no significant adverse effect on yield
COMMENTS: Preemergence applications of fluorodiphen, alachlor, and alachlor with dinoseb effected good control of fall panicum, large crabgrass, and redroot pigweed in snap beans; combination of alachlor with dinoseb provided good control of lambsquarters; snap bean injury resulted from both fluorodiphen and alachlor and was influenced by preemergence rainfall
REFERENCE: Wilson, H.P., J.N. Belote, and T.E. Hines, "Activities of Alachlor and Fluorodiphen in Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:161-166 (1974).

<1162>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodifen
PLANT: Nutsedge (CYPERUS sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Pigweed (AMARANTHUS sp.); Pigweed, spiny (AMARANTHUS SPINOSUS); Jimsomweed (DATURA STRAMONIUM); Purslane, common (PORTULACA OLERACEA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 4% EC Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravely silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of broadleaf, sandbur, and goosegrass but no control of nutgrass or ricegrass with good corn tolerance
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<1163>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluometuron
PLANT: Castorbean, volunteer (RICINUS COMMUNIS); Cotton (GOSSYPIUM HIRSUTUM); Sorghum, grain (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1.7 and 2.2 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; 188 l/ha
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; time period--1968 to 1970
EFFECTS: Moderate control of volunteer castorbean with no adverse effect on crop yields
COMMENTS: Volunteer castorbean most effectively controlled by preemergence application of propazine in grain sorghum and by fluometuron in cotton; preplant applications of propazine not as effective as preemergence treatments.
REFERENCE: Smith, D.T., A.W. Cooley, D.O. Mooney, and A.F. Wiese, "Herbicidal Control of Volunteer Castorbean," Weed Sci. 20(4):338-340 (1972).

<1164>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodifen
PLANT: Junglerice (ECHINOCHLOA COLONUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 2 and 4 kg/ha
APPLICATION METHODS: Knapsack sprayer application of 670 dm(3)/ha volume
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; 3 x 5 m plots; visual toxicity and weed control ratings
EFFECTS: Application 5 to 8 days after seeding at 2 kg/ha--C. ROTUNDUS and R. EXALTATA resistant, L. CHINENSIS and E. COLONUM susceptible, minor toxicity to rice; preemergence application at 4 kg/ha--similar weed control and rice toxicity as above
COMMENTS: Sufficient control of weeds to warrent further testing; effects on all weeds not specifically reported
REFERENCE: Aryeetey, A.N., "Chemical Weed Control in Rice in Ghana," Ghana J. Agric. Sci. 6:199-204 (1973).

<1165>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodifen
PLANT: Grasses; Broadleaf weeds; Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3.0 and 4.0 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 13 locations in Iowa
EFFECTS: Effective control of grasses and moderate control of broadleaf weeds with no adverse effect on soybean
COMMENTS: Dinitroaniline chemicals applied at proper rates for organic matter levels present provided good to excellent grass control; rate probably more critical for organic matter on BAS-3901, CG-10832 and

<1165> CONT.
dinitramine than for trifluralin; organic matter exceedingly critical for nitraline; vernolate provided good grass control and at most locations, better broadleaf control than dinitroaniline chemicals; preplant incorporated plus overlay treatment can increase broadleaf and overall weed control and usually result in less phototoxicity to the crop
REFERENCE: Jennings, V.M., D.W. Staniforth, and W.G. Lovely, "Soybean Herbicide Evaluations Across Iowa in 1973," Proc. N. Cent. Weed Contr. Conf. 28:42-45 (1973).

<1166>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodifen
PLANT: Couchgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Moderate control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1167>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodifen
PLANT: Broadleaf weeds; Grasses; Bean, pinto (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 4.5 lb/A
APPLICATION METHODS: Preplant spray (incorporated, 3.5 in. depth) and preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--Tripp sandy loam and Bridgeport loam; two locations in Nebraska
EFFECTS: Moderate control of weeds with slight initial injury to field beans but little if any adverse effect on bean yield
COMMENTS: Weed control and field bean yields higher when EPTC, trifluralin, and alachlor incorporated than when applied 4 days after planting and rotary hoed; best results with alachlor resulted when applied preemergence; best control of black nightshade was with EPTC and alachlor or these herbicides in combinations with other herbicides
REFERENCE: Fenster, C.R. and G.A. Wicks, "Weed Control in Field Beans in Nebraska," Proc. N. Centr. Weed Contr. Conf. 26:50-52 (1971).

<1168>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodifen
PLANT: Plants; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 kg/ha
APPLICATION METHODS: Broadcast (G) and spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate weed control with no adverse effect on rice
COMMENTS: 2,4-D and MCPA equally effective in controlling barnyard grass and other annual weeds in transplanted rice; yields significantly increased in nearly all applications; for direct-seeded flooded rice, granular formulations of several new herbicides, such as butachlor, benthiocarb and C-288 highly selective in controlling barnyardgrass and other annual weeds under tropical conditions
REFERENCE: De Datta, S.K., "Chemical Weed Control in Tropical Rice in Asia," PANS 28(4):433-440 (1972).

<1169>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodifen
PLANT: Peanut (ARACHIS HYPOGAEA); Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 3.36, 5.0 and 5.04 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays in volume of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: Preemergence--5.04 kg/ha gave 80% weed control 25 days after treatment, 3.36 kg/ha gave 60% and no weed control 24 and 72 days after planting, respectively with no crop damage, 5.0 kg/ha gave 70 and 50% weed control 24 and 72 days after planting, respectively with no crop damage; postemergence--5.0 kg/ha gave about 93% and 91% weed control 48 and 72 days after planting, respectively with only very minor crop injury
COMMENTS: 5.0 kg/ha gave better weed control when applied postemergence
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<1170>
<1170>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Flourodifen
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 3.4 and 5.0 kg/ha
APPLICATION METHODS: Preemergence treatments; April and September applications
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Legumes eliminated; broadleaf weeds controlled
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<1171>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodifen
PLANT: Soybean (GLYCINE MAX); Jimsomweed (DATURA STRAMONIUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 4.48 kg/ha
APPLICATION METHODS: Post directed spray at 280.5 l./ha to lower 1/3 of soybean plant in 30 cm bands; surfactant Adjuvan-T at 0.5% (v/v) added
EXPERIMENTAL CONDITIONS: Mattapex silt loam; randomized complete block design with 4 replications; jimsonweed 25 to 30 cm tall at application
EFFECTS: Commercially unacceptable jimsonweed control; good pigweed control
COMMENTS: No reported soybean injury
REFERENCE: Parochetti, J.V., "Postemergence and Postdirected Broadleaved Weed Control for Soybeans," Proc. Northeast. Weed Sci. Soc. 27:75-79 (1973).

<1172>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodifen
PLANT: Jimsomweed (DATURA STRAMONIUM); Soybean (GLYCINE MAX); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Morningglory, tall (IPOMOEA PURPUREA); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 3 and 5 lb/A
APPLICATION METHODS: Preemergence and "at cracking" treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies; Mattapex silt loam; 10 by 20 ft plots, 4 rows of soybeans, 4 replications; 3 stage postemergence treatments--(1) unifoliate soybean leaves, jimonseed 2 to 3 inches high, (2) two and three trifoliate soybean leaves, 5 to 6-inch high jimonseed, (3) five to six soybean leaves, 11 to 13-inch high jimsonweed; spring planting; 3 year study
EFFECTS: At cracking--3 lb/A caused moderate soybean injury, excellent jimsonweed control and just barely satisfactory velvetleaf control, 5 lb/A gave good control of both weeds with moderate soybean injury; preemergence--no soybean injury, moderate jimsonweed control
COMMENTS: Soybean injury barely acceptable; combinations of herbicides also tested
REFERENCE: Parochetti, J.V., "Control of Jimsonweed and Three Broadleaved Weeds in Soybeans with Herbicides," Proc. Northeast. Weed Sci. 29:19-25 (1975).

<1173>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodifen
PLANT: Grasses; Broadleaf weeds; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 4.5 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 10 locations in Iowa
EFFECTS: Moderate control of weeds with very slight growth reduction of soybean
COMMENTS: Preplant incorporated herbicides trifluralin, dinitramine, profluralin, alachlor, and vernolate effectively reduced grassy weed populations; tank mix addition of metribuzin and bifenox broadened the spectrum of weeds controlled; overlay treatments of metribuzin were also equally effective in broadening the spectrum of weed control; preemergence treatments provided excellent examples of grass and broadleaf weed control in soybeans
REFERENCE: Jennings, V.M., "Soybean Herbicide Evaluations Across Iowa in 1974," Proc. North Cent. Weed Control Conf. 29:79-83 (1974).

<1174>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodifen
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 500 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Promoted tuber sprouting
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<1175>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Preforan
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Grasses; Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI); Foxtail, giant (SETARIA FABERI); Soybean (GLYCINE MAX); Lamb's-quarters (CHENOPODIUM ALBUM); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 3.0 and 4.5 lb/A
APPLICATION METHODS: Preemergence application; 10 to 30 gal/A at 20 to 30 psi
EXPERIMENTAL CONDITIONS: Field study; locations in 6 states (MI, MO, NE, IL, IA, and OH)
EFFECTS: Effective control of pigweed and lambsquarters with slight to moderate control of remaining weeds and soybean yield reduction
COMMENTS: CGA-10832 gave good control of prevalent weed species throughout growing season; CGA-11607 and CGA-14397 gave inferior weed control compared to CGA-10832; weed control from trifluralin comparable at equivalent rates to CGA-10832, with no significant differences indicated
REFERENCE: LeBaron, H.M., R.P. Wilson, and T.D. Taylor, "Evaluation of CGA-10832 and Other Herbicides for Soybeans in the North Central States," Proc. N. Cent. Weed Contr. Conf. 26:44-48 (1971).

<1176>
CHEMICAL NAME: Benzene, 2-nitro-1-(4-nitrophenoxy)-4-(trifluoromethyl)-
CHEMICAL COMMON NAME: Fluorodifen
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 3.3 kg/ha
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Effective control of weeds and no adverse effect on peanuts
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit futher testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<1177>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Carpetweed (MOLLUGO VERTICILLATA); Ladysthumb (POLYGONUM PERSICARIA); Crabgrass, large (DIGITARIA SANGUINALIS); Chickweed, common (STELLARIA MEDIA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Shallot (ALLIUM ASCALONICUM)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Postemergence spray; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Plymouth sandy loam; supplemental irrigation
EFFECTS: Moderate to effective control of all weeds with no adverse effect on shallots
COMMENTS: All herbicides resulted in varving degrees of weed control but no unacceptable phytotoxicity to crop; alachlor and nitrofen provided good to excellent control of weeds; methazole appeared effective on broader spectrum of weeds than nitrofen
REFERENCE: Sanok, W.J., G.W. Selleck, and W.L. Kline, "Herbicides for Weed Control in Onions and Shallots," Proc. Northeast. Weed Sci. Soc. 31:261-265 (1977).

<1178>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: TOK
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Carpetweed (MOLLUGO VERTICILLATA); Ladysthumb (POLYGONUM PERSICARIA); Crabgrass, large (DIGITARIA SANGUINALIS); Chickweed, common (STELLARIA MEDIA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Shallot (ALLIUM ASCALONICUM)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Postemergence spray; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Plymouth sandy loam; supplemental irrigation
EFFECTS: Moderate to effective control of all weeds except ragweed (slight control) with no adverse effect on shallots
COMMENTS: All herbicides resulted in varying degrees of weed control but no unacceptable phytotoxicity to crop; alachlor and nitrofen provided good to excellent control of weeds; methazole appeared effective on broader spectrum of weeds than nitrofen
REFERENCE: Sanok, W.J., G.W. Selleck, and W.L. Kline, "Herbicides for Weed Control in Onions and Shallots," Proc. Northeast. Weed Sci. Soc. 31:261-265 (1977).

<1179>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Yew (TAXUS INTERMEDIA); Chickweed, common (STELLARIA MEDIA); Primrose, cut-leaf evening (OENOTHERA LACINIATA); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Posttransplant spray; 374 l./ha at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--low flatwood fine sands; subsurface irrigation; time period--1970 to 1974
EFFECTS: Slight to moderate control of weeds with no adverse effect on cabbage yield
COMMENTS: Most effective weed control obtained with alachlor, alachlor + CDEC, alachlor + DCPA, and DCPA + nitrofen; DCPA effective in controlling dock and chickweed, but controlled evening primrose less effectively; nitrofen provided excellent control of dock and fair to good control of evening primrose.
REFERENCE: Shumaker, J.R., "Chemical Weed Control in North Florida Cabbage," Fla. State Hort. Soc. 87:170-174 (1974).

<1180>
<1180>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Cabbage (BRASSICA OLERACEA); Purslane, common (PORTULACA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pineappleweed (MATRICARIA MATRICARIODY)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preemergence spray; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; supplemental irrigation; crops direct seeded
EFFECTS: Effective weed control except pineappleweed (no control) with slight phytotoxicity to cabbage
COMMENTS: Outstanding candidates for selectivity in seeded cabbage and control of barnyardgrass, purslane, and pineappleweed were H22234 and oryzalin; alachlor also gave excellent control but initial stunting of cabbage seedlings; by end of the season, phytotoxicity not visible with alachlor or any other treatment.
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicides for Weed Control in Sweet Corn and Cabbage," Proc. Northeast. Weed Sci. Soc. 31:256-260 (1977).

<1181>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Junglerice (ECHINOCHLOA COLONUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 3 kg/ha
APPLICATION METHODS: Preemergence treatment; application by knapsack sprayer at 670 dm(3)/ha volume
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; 3 x 5 m plots; visual toxicity and weed control ratings
EFFECTS: E. COLONUM susceptible, C. ROTUNDUS resistant
COMMENTS: Promising herbicide for rice weed control
REFERENCE: Aryeetey, A.N., "Chemical Weed Control in Rice in Ghana," Ghana J. Agric. Sci. 6:199-204 (1973).

<1182>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 3.36 kg/ha
APPLICATION METHODS: Postemergence (early and late) spray; 188 l./ha (early) and 235 l./ha (late, directed spray); X-77 surfactant (0.5%)
EXPERIMENTAL CONDITIONS: Field study; soil-Cecil sandy clay loam; time period--1969 to 1971
EFFECTS: Effective weed control with no adverse effect on sunflower
COMMENTS: Excellent grass control and poor broadleaf weed control obtained from early postemergence treatments of RP 17623 when applied as over-the-top spray at either cotyledon or first-leaf stage of sunflower growth, weed control results similar to RP 17623 from several herbicides applied as late-directed postemergence sprays; early postemergence treatments with RP 17623 caused some early injury to sunflower plants and reduction in achene oil percent when compared with achenes from untreated plants, but achene yields not reduced
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Postemergence on Weeds and Sunflowers," Crop Sci. 12(1):695-697 (1972).

<1183>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Poor control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1184>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Plants; Stonecrop (SEDUM BREVIFOLIUM); (DELASPERMA ALBA); Ivy, Algerian (HEDERA sp.); (OSTEOSPERMUM FRUT.); Iceplant (CARPOBROTUS EDULE); Periwinkle, large (VINCA MAJOR)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil-sandy loam; evaluation times--1, 2, 6, and 9 mos
EFFECTS: Moderate control of weeds with slight damage to ground cover plants that usually lasted only 3 mos
COMMENTS: Use of herbicides significantly less expensive than hand weeding; all herbicide treated plots of iceplant had greater fresh weight and rooting than non-weeded controls; oxadiazon, oryzalin, and nitrofen + nitralin appeared most effective
REFERENCE: Elmore, C.L. and W.A. Humphery, "Preemergence Weed Control in Ground Cover Ornamentals," Proc. West. Soc. Weed. Sci. 27:62-65 (1974).

<1185>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat, and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in sorghum, oat, and cucumber at 1 and 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<1186>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Cucumber (CUCUMIS SATIVUS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Galinsoga (GALINSOGA PARVIFLORA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed, prostrate (AMARANTHUS BLITOIDES); Foxtail, giant (SETARIA FABERI); Purslane, common (PORTULACA OLERACEA); Lamb's-quarters (CHENOPODIUM ALBUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Murrill loam; fall plowing, seedbed preparation the following May 28; cucumber planted 12 days later on June 10; herbicides applied 1 day after planting; single row plots 5 by 36 ft
EFFECTS: Good weed control at both rates, moderate cucumber injury at 2 lb/A, severe injury at 4 lb/A; cucumber stand significantly reduced
REFERENCE: Noll, C.J., "Herbicide Weeding of Cucumber Grown in a Stale Seed Bed," Proc. Northeast. Weed Sci. Soc. 29:262-263 (1975).

<1187>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Lotus (LOTUS PEDUNCULATUS); Knotweed (POLYGONUM AVICULARE); Fumitory (FUMARIA sp.); Plantain (PLANTAGO sp.); Fir, Douglas (PSEUDOTSUGA MENZIESII)
EXPERIMENTAL DOSE: 3.0, 5.0 and 7.0 kg/ha
APPLICATION METHODS: Preemergence applications with CO2 spray unit in 225 l./ha water
EXPERIMENTAL CONDITIONS: Seed bed divided into 3 m plots with 1 m control strips between plots; paraquat applied to all plots preplanting at 0.6 Kg in 225 l./ha water; 6 treatment variations--(1) 7 kg/ha just prior to seeding emergence, and a second 7 kg/ha treatment when fresh crop of weeds was in first true leaf stage, (2) 5 kg/ha, same conditions as treatment 1, (3) 3 kg/ha, same conditions as treatment 1, (4) 7 kg/ha when weeds in first true leaf stage (5) 5 kg/ha when weeds in first true leaf stage and (6) 3 kg/ha when weeds in first true leaf stage
EFFECTS: Excellent weed control provided by all treatments; 90% or better of fir seedlings were healthy--283 healthy trees, 19 were chlorotic and 8 were dead
COMMENTS: 2 trees died in one of the controls
REFERENCE: Balneaves, J.M., "Initial Weed Control in Douglas Fir Nursery Beds at Rangiora," N. Z. J. For. 20(1):153-156 (1975).

<1188>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Rose (ROSA sp.); Oxalis, yellow (OXALIS CORNICULATA)
EXPERIMENTAL DOSE: 3 and 9 lb/A
APPLICATION METHODS: Treatments applied with 2 gallon, x-Pert Hudson sprayer, equipped with 8002 Tee-jet nozzle
EXPERIMENTAL CONDITIONS: Greenhouse studies; plots--3 X 28 ft; 3 replications; planting mixture--redwood shavings and Baywood loamy sand soil; trials established April 28, observations made June 11 and August 20
EFFECTS: June 11--3 lb/A gave 53.1% weed control, 9 lb/A gave 95.8% control; August 20--3 lb/A gave 34.7% weed control and 9 lb/A gave 98.2% control; no observed injury to roses
COMMENTS: Effective pre- or postemergence control of yellow oxalis
REFERENCE: Bivins, J.L. and C. Elmore, "Nitrofen Herbicide for Control of Yellow Oxalis in Greenhouse Roses," Calif. Agric. 26(11):11 (1972).

<1189>
<1189>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Tok E-25
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1500 ppm
APPLICATION METHODS: Postemergence Spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; evaluation time--up to 16 da at 2-day intervals
EFFECTS: Moderate chlorosis (reduced chlorophyll content) of leaves
COMMENTS: Chlorophyll a and b in the foliage of CYPERUS RONTUNDUS rapidly decreased on application of 1500 ppm of herbicides Bladex-O, Embutox-plus, 2,4,-D, and Tok E-25
REFERENCE: Misra, L. P., L. D. Kapoor, and P. S. Choudhri, "Effect of Herbicides on the Chlorophyll Content of Nutgrass (CYPERUS ROTUNDUS L.)" Photosynthetica 8(3):302-303 (1974).

<1190>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Cudweed, low (GNAPHALIUM ULIGONOSA); Broccoli (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Cabbage (BRASSICA OLERACEA); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 4.5 and 6.7 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; 5 year period
EFFECTS: Effective control of weeds in one of five years only at both rates with no adverse effect on vegetables
COMMENTS: Trifluralin, DCPA, and nitrofen gave eratic weed control and must be applied at highest rates of application permitted by label for even average weed control in most years; two new herbicides pryanchlor and DMC 3950 show promise for use on cole crops in Eastern Canada
REFERENCE: Ivany, J.A. and J.A. Cutcliffe, "Herbicides for Cole Crops in Eastern Canada," Proc. Northeast. Weed Sci. Soc. 27:194-198 (1973).

<1191>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS); Rape (BRASSICA CAMPESTRIS)
EXPERIMENTAL DOSE: 11.0 to 2818 g/ha
APPLICATION METHODS: Postemergence spray; 112.25 l./ha: pressure 2.64 kg/sq cm; 65015 TeeJet nozzle; formulated with ethyl acetate, water, and Advawet # 10 surfactant (20:78:2)
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; light intensity--1000 fc; day length--16 hrs; also culture in environmental chamber at 21 C, 16 hr photoperiod, and 2500 fc for leaf sections studied
EFFECTS: Despite greater spray retention and penetration of nitrofen by rape, this plant was more tolerant of nitrofen than either foxtail or pigweed; as determined by dry weight loss, the 50% effective dosage was 661 g/ha for rape, 115 g/ha for foxtail, and 10 g/ha for pigweed
COMMENTS: Green foxtail and redroot pigweed respectively, 9 and 99 times more susceptible to nitrofen than rape
REFERENCE: Hawton, D. and E.H. Stobbe, "Selectivity of Nitrofen among Rape, Redroot Pigweed, and Green Foxtail," Weed Sci. 19:42-44 (1971).

<1192>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Broadleaf weeds; Spikerush (ELEOCHARIS ACICULARIS); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 100 g/10A
APPLICATION METHODS: Postemergence
EXPERIMENTAL CONDITIONS: Pot study; each pot--barnyard grass seeds and transplanted rice and spikerush plants; after barnyard grass germination, test solution added to pot; observations after 1 month; broadleaf weeds grew spontaneously in pots
EFFECTS: No injury to rice; 25% or lower spikerush inhibition; 75% or greater inhibition of broadleaves and barnyard grass
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<1193>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrophen
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 500 micro M
APPLICATION METHODS: Addition to assay preparations of chloroplasts
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: Increased photochemical activity and chloroplast bleaching
COMMENTS: Dual wavelength spectrophotometry applied to observations of small spectral changes during biochemical reactions in intact tissue; based on principle that absorbance reading at wavelength of isobestic point of reaction fluctuates with time in same manner as reading at wavelength where an absorbance change due to reaction takes place
REFERENCE: Inoue, Y., Yaginuma, N., Ogawa, T., Konishi, K., and K. Shibata, "Spectral Changes of Chloroplasts as a Means to Examine Phytotoxic Effects of Herbicides," in Environmental Toxicology of Pesticides, F. Matsumura, G.M. Boush, and T. Misato (Eds.) Academic Press, New York and London, pp. 549-570 (1972).

<1194>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 500 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Promoted tuber sprouting
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<1195>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: Nitrofen
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Crabgrass, hairy (DIGITARIA SANGUINALIS); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preemergence; postemergence, and preplant incorporated sprays; 18 gal/A at 30 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam
EFFECTS: Preemergence--moderate to effective weed control with no adverse effect on cabbage
COMMENTS: None of the herbicides used unacceptably phytotoxic, but alachlor resulted in slight temporary stunting; alachlor most effective herbicide on total weed spectrum and HOE 23408 most effective for control of annual grasses
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicide Trial for Direct Seeded Fall Cabbage on Long Island," Proc. NE Weed Sci. Soc. 30:197-199 (1976).

<1196>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
CHEMICAL COMMON NAME: FW925
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimal lethal concentration 4.36 to 3.65 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<1197>
CHEMICAL NAME: Benzene, 2,4-dichloro-1-methyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1198>
CHEMICAL NAME: Benzeneacetamide
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--slightly abnormal wheat growth, normal cabbage growth; Petri dish test--85, 72, and 61% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1199>
<1199>
CHEMICAL NAME: Benzeneacetamide
PLANT: Rice (ORYZA SATIVA); Lettuce (LACTUCA SATIVA); Millet, barnyard (PANICUM CRUSGALLI); Turnip (BRASSICA RAPA)
EXPERIMENTAL DOSE: 50, 100, 250, 500, and 1000 ppm
APPLICATION METHODS: Germinated seeds grown in test solution
EXPERIMENTAL CONDITIONS: Seeds soaked in distilled water then transferred to Petri dishes; rice seeds grown in 20 ml test solution (50, 100, 250, 500, and 1000 ppm solutions), other seeds grown in 3 ml test solution (1000 ppm); rice grown for 6 days and other seeds for 48 hr
EFFECTS: Rice--second leaf sheath and root inhibition at all rates, more pronounced at 1000 ppm, more root inhibition than leaf sheath inhibition; other plants--slight millet and rape shoot inhibition, moderate lettuce shoot inhibition, moderate root inhibition of all plants
COMMENTS: Inhibition of lettuce, millet and rape observed only at 1000 ppm and above
REFERENCE: Takai, M., S. Miyamoto, Y. Hattori, and S. Tamura, "Isolation of 2-Phenylacetamide as a Plant Growth Regulator Produced by ACTINOMYCES," Agric. Biol. chem. 27(12):876-877 (1963).

<1200>
CHEMICAL NAME: Benzeneacetamide, N-methyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--normal cabbage growth, abnormal wheat growth; Petri dish test--108, 61, and 26% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1201>
CHEMICAL NAME: Benzeneacetamide, N-methyl-N-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 30 lb/A
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--abnormal cabbage growth, normal wheat and ryegrass growth; pot test--slightly abnormal wheat growth and abnormal cabbage growth
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1202>
CHEMICAL NAME: Benzeneacetamide, N-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 and 30 lb/A
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--slightly abnormal growth at 10 lb/A, normal growth of wheat at 30 lb/A and slightly abnormal cabbage growth at 30 lb/A; Petri dish test--no data
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1203>
CHEMICAL NAME: Benzeneacetamide, N,N-diethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--abnormal growth; Petri dish test--92, 80, and 31% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1204>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 10 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal cabbage growth, slightly abnormal wheat and ryegrass growth; pot test--abnormal wheat and cabbage growth; Petri dish test--102, 71, and 26% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1205>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Dymid
PLANT: Goosegrass (ELEUSINE INDICA); Love-grass (ERAGROSTIS PECTINICEA); Nutsedge, purple (CYPERUS ROTUNDUS); Pigweed, spiny (AMARANTHUS SPINOSUS); Apple of Peru (NICANDRA PHYSOLODES); Purslane, common (PORTULACA OLERACEA); Floras paintbrush (EMILIA SONCHIFOLIA); Spurge, garden (EUPHORBIA HIRTA); Cabbage (BRASSICA OLERACEA); Cabbage, Chinese (BRASSICA PEKINENSIS); Mustard, Chinese (BRASSICA JUNCEA); Mustard, cabbage (BRASSICA CHINENSIS); Radish (RAPHANUS SATIVUS); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of all weeds except NICANDRA and severe damage to or death of crop plants
COMMENTS: Vegadex (CDEC) and treflan (trifluralin) suitable herbicides while dymid very toxic to crop; selectivity not due to a single factor but an interaction of morphological, physiological and genetical factors which made particular crop tolerant or susceptible
REFERENCE: Vahidy, A.A., "Differential Tolerance within Certain Cruciferous Crops to Vegadex, CIPC, Dymid and Treflan," Pak. J. Bot. 5(1):79-85 (1973).

<1206>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Plants; Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 3.0 and 6.0 lb/A
APPLICATION METHODS: Preplant incorporated (2 in. soil depth) and posttransplant (same day)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--aprox. 3 mos
EFFECTS: In preplant incorporated, effective control of weeds with reduced yield of mums at 6.0 lb/A; in posttransplant, moderate weed control and reduced yield of chrysanthemums
COMMENTS: Excellent weed control obtained with number of herbicides; only R-7465 and diphenamid used as soil surface treatments and bensulide gave unsatisfacotry control; various herbicide treatments found to affect growth of chrysanthemum plants to different degrees
REFERENCE: Welker, W.V. and J.C. Cialone, "An Evaluation of Herbicides for the Control of Weeds in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 26:51-54 (1972).

<1207>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed (AMARANTHUS sp.); Nightshade (SOLANUM sp.);Shepherd's purse (CAPSELLA BURSA-PASTORIS); Nutsedge (CYPERUS sp.)
EXPERIMENTAL DOSE: 4 and 6 lb/A
APPLICATION METHODS: Springler irrigation; furrow irrigation
EXPERIMENTAL CONDITIONS: Not Given
EFFECTS: Herbicide acceptably controlled all weeds tested
REFERENCE: Agamalian, H., B. Fischer, F. Ashton, A. Lange, E. Stilwell, R. Brendler, H. Kempen, V. Schweers, H. Collins, R. King, and L. Buschmann, "Weed Control Studies in Tomatoes, 1968-1970," Calif. Agric. 26(1): 10-11 (1972).

<1208>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Quackgrass (AGROPYRON REPENS); Nutsedge, yellow (CYPERUS ESCULENTUS); Lamb's-quarters (CHENOPODIUM ALBUM); Yew, upright (TAXUS CUSPIDATA); Chickweed, common (STELLARIA MEDIA); Horseweed (ERIGERON CANADENSIS); Vetch, bird (VICIA CRACCA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Carpetweed (MOLLUGO VERTICILLATA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Formulation -- 50% WP; sprays applied with hand-held boom to deliver 50 gal/A
EXPERIMENTAL CONDITIONS: Yews (5 years old) spaced at 2 foot intervals in rows 3 feet apart; herbicides applied on December 1, 1970 and again on December 9, 1971; soil was moist and 39 degree F at 3 inch depth at 1970 treatment, air temperature was 45 degrees F; December 1971 application -- 1 to 3 inches snow on ground and air temperature 39 degrees F
EFFECTS: No control of quackgrass or nutsedge; combination of simazine plus diphenamid did reduce invasion of

<1208>
<1208> CONT.
bird vetch; some extended control of annual weeds; no appreciable injury to yews
COMMENTS: Excessive rainfall second growing season accelerated herbicide leaching; results of weed control with combinations of herbicides reported
REFERENCE: Ahrens, J.F., "Fall Applications of Herbicides for Control of Quackgrass and Yellow Nutsedge in TAXUS CUSPIDATA CAPITATA," Proc. Northeast. Weed Sci. Soc. 28:379-385(1974).

<1209>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Crabgrass, large (DIGITARIA SANGUINALIS); Wiregrass (ELEUSINE INDICA); Bermudagrass, common (CYNODON DACTYLON); Sedge, annual (CYPERUS COMPRESSUS); Signalgrass, broad-leaf (BRACHIARIA PLATYPHYLLA); Eclipta (ECLIPTA ALBA)
EXPERIMENTAL DOSE: 5 lb/A
APPLICATION METHODS: Formulation -- 50% WP; sprays applied with knapsack sprayer at 40 psi pressure; preemergence application through planting hole
EXPERIMENTAL CONDITIONS: Myakka Fine Sand; mulch -- 55 lb biodegradable kraft paper with surfaces coated with thin layer of polyethylene; fall and spring growing seasons; full bed mulch system; irrigation supplied by a seep ditch system -- each 7 row unit separated by a water ditch
EFFECTS: Weed control better than 90%; no significant differences in fruit size or yield as a result of herbicide
COMMENTS: Fall growing season -- ideal weather, well distributed rainfall; spring growing season -- abnormally dry and hot; signalgrass and eclipta not encountered in fall
REFERENCE: Burgis, D.S., "Herbicides for the Full Bed Mulch Tomato Culture System - II: In-the-Row," Proc. South. Weed Sci. Soc. 26:201-204 (1973).

<1210>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate control of all weeds with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<1211>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Pepper (CAPSICUM FRUTESCENS); Broadleaf weeds; Purslane, common (PORTULACA OLERACEA); Grasses
EXPERIMENTAL DOSE: 2.0 to 8.0 lb/A
APPLICATION METHODS: Preemergence incorporated (by irrigation); preplant incorporated (disking); pretransplant
EXPERIMENTAL CONDITIONS: Field study; irrigation (sprinkler and furrow); time period--1964, 1965, and 1968
EFFECTS: Effective control of weeds with slight vigor reduction of peppers at all application rates
COMMENTS: Effective weed control of broadleaf and grass species achieved under sprinkler irrigation with diphenamid; some injury recorded on pepper seedlings
REFERENCE: Whiting, F.L., L.P. Lippert, and J.M. Lyons, "Chemical Weed Control in Peppers," Calif. Agric. 24(7):8-9 (1970).

<1212>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete or near complete control at 10(-3), 10(-4), and 10(-5)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1213>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Pine, loblolly (PINUS TAEDA); Pine, slash (PINUS ELIOTTII); Plants
EXPERIMENTAL DOSE: 4.5 and 9.0 kg/ha
APPLICATION METHODS: Preemergence application; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; locations in 12 states (AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, and VA); evaluation time--varied, up to 132 days; sprinkler irrigation
EFFECTS: Moderate control of weeds with no adverse effects on pine seedlings
COMMENTS: Preemergence weed control in slash and loblolly pine seedbeds appears feasible; diphenamid and

<1213> CONT.
trifluralin not injurious to pine seedlings at twice rate needed for good control of grasses; sprinkler irrigation gave adequate incorporation of trifluralin for good early season grass control, but residual activity might have been increased by a more thorough soil incorporation; diphenamid exhibited a longer residual activity than trifluralin at all locations
REFERENCE: Dill, T.P. and M.C. Carter, "Preemergence Weed Control in Southeastern Forest Nurseries," Weed Sci. 21(4):363-366 (1973).

<1214>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Pimpernel, common (ANAGALLIS ARVENSIS); Crunchweed (SINAPIS ARVENSIS); Pigweed (AMARANTHUS sp.); Bindweed, field (CONVOLVULUS ARVENSIS)
EXPERIMENTAL DOSE: 2.4 and 4.8 kg/ha
APPLICATION METHODS: Postemergence application; 200 l./ha; trifluralin and chlorthal-dimethyl incorporated by rototilling; all others not incorporated
EXPERIMENTAL CONDITIONS: Field study; plots sprayed twice a year over a 4-year period; sprinkler irrigation; greenhouse study; residues determined by mustard bioassay
EFFECTS: Slight effect on AMARANTHUS and moderate reduction of other weeds with no (or slight) residual phytotoxic effect
COMMENTS: Phytotoxicity to weeds in decreasing order: diuron, bromacil, simazine, trifluralin, prometryne, neburon, fluometuron, pyrazon, diphenamid, chlorthal-dimethyl; persistence of herbicides in decreasing order: diuron, bromacil, simazine, neburon, fluometuron, trifluralin, prometryne; control produced by pyrazon improved with the number of applications, but that of diphenamid and chlorthal-dimethyl remained weak and short
REFERENCE: Horowitz, M., T. Blumenfeld, G. Herzlinger, and N. Hulin, "Effects of Repeated Applications of Ten Herbicides on Weed Population, Residue Accumulation and Nitrification," Weed Res. 14(2):97-109 (1974).

<1215>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--1 ppm showed 50% or greater inhibition in sorghum and oat but less than 50% in cucumber, 10 ppm gave same results; shoot--1 ppm caused less than 50% inhibition in sorghum and oat, 10 ppm showed 50% or greater in both
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<1216>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Ash, green (FRAXINUS PENNSYLVANICA); Poplar, yellow (LIRIODENDRON TULIPIFERA); Walnut, black (JUGLANS NIGRA); Pine, white (PINUS STROBUS); Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 9.0 and 18.0 kg/ha
APPLICATION METHODS: Posttransplant spray; 29 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Ross-Geneco complex
EFFECTS: Growth stimulation of hardwoods and no effect on evergreens
COMMENTS: Oxadiazon, napropamide and simazine produced very favorable results at low rates; simazine only injurious to green ash; diphenamid and DCPA effective without incorporation only at extremely high rates; tolerance range for Velpar and RP-23465 for use on newly planted seedlings appear very small; bifenox as used did not appear to be detrimental to seedlings
REFERENCE: Wiltrout, T.R. and H.A. Holt, "Prospects of Controlling Vegetation in New Forest Plantations," Proc. N. Cent. Weed Control Conf. 30:31-36 (1975).

<1217>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Broadleaf weeds; Grasses; Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Pretransplant incorporated and postemergence sprays 27 and 40 gal/A; all herbicides evaluated alone or in combination with metribuzin
EXPERIMENTAL CONDITIONS: Field study; soil--Aura sandy loam
EFFECTS: Slight control of weeds with no adverse effect on tomatoes in preemergence application
COMMENTS: Only U-27,267 performed at acceptable level of weed control when used alone; all pre-plant treatments followed by post-plant applications of metribuzin resulted in good weed control, one-half pound of metribuzin early post or late post was consistently the better treatment; none of post-plant metribuzin treatments resulted in significant injury to the tomatoes; all treatments resulted in increased tomato yield
REFERENCE: Grande, J.A. and T. Ombrello, "Weed Control in Transplanted Tomatoes with Metribuzin in Combination with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:219-224 (1975).

<1218>

<1219>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Yam (DIOSCOREA sp.); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed (AMARANTHUS DUBIUS); Painted-leaf (EUPHORBIA HETEROPHYLLA); Junglerice (ECHINOCHLOA COLONUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.12, 3.36, and 10.10 kg/ha
APPLICATION METHODS: Preemergence application delivered in 340 l./ha of water
EXPERIMENTAL CONDITIONS: Heavy clay soil; randomized complete block design with 4 to 8 replications; spring or summer planting
EFFECTS: Fair to good weed suppression for 4 to 6 wk but crop yields reduced
COMMENTS: No treatment controlled weeds entire first growing season; flaming before crop emergence reduced density of all weeds except nutsedge
REFERENCE: Gaskins, M.H. and H. Delpin, "Weed Control in New Plantings of Steroid-Producing DIOSCOREA Species," Weed Sci. 21(3):263-265 (1973).

<1219>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Peanut (ARACHIS HYPOGAEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Junglerice (ECHINOCHLOA COLONUM); Bermudagrass (CYNODON DACTYLON); Nightshade (SOLANUM VILLOSUM)
EXPERIMENTAL DOSE: 3.2 kg/ha
APPLICATION METHODS: Postemergence spray; aqueous carrier-500 l./ha; 60 sq m plots
EXPERIMENTAL CONDITIONS: Field study; sprinkle irrigation 24 hr after herbicide application and every 2 wk thereafter; sandy loess soil; temperature--20 to 25 C; RH--51 to 68%; weekly hand weeding of controls; phosphorus addition--500 to 600 kg/ha; monthly cultivation when employed
EFFECTS: Effective weed control with application of herbicides singly, in combination, or in conjunction with monthly cultivation; no or minimal effect on peanut yield
COMMENTS: Evaluation of eleven herbicides or herbicide combinations; hand weeding most effective; benefin alone and benefin/terbutryn, alachlor/ terbutryn, diphenamid/terbutryn, and benefin/alachlor combinations as effective as hand weeding with no adverse effect on peanut yield
REFERENCE: Amir, J. and N. Lifshitz, "Weed Control of Irrigated Peanuts in an Arid Zone," J. Agric. Sci. Camb. 86:623-626 (1976).

<1220>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Enide
PLANT: Bluegrass, annual (POA ANNUA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preplant solution soak
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Puyallup fine sandy loam; pH--5.8; temperature--approx 60 F
EFFECTS: Effective bluegrass control (one exp) with no adverse effect on bentgrass
COMMENTS: Dacthal, betasan, dipropalin, trifluralin, and enide significantly controlled annual bluegrass for periods of 9 to 12 weeks; dacthal and betasan completely nonphytotoxic to mature turf
REFERENCE: Goss, R.L., "Preemergence Control of Annual Bluegrass (POA ANNUA L.)," J. Agron. 56(1):479-481 (1964).

<1221>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Alfalfa (MEDICAGO SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Millet, foxtail (SETARIA ITALICA); Morningglory, tall (IPOMOEA PURPUREA); Barley (HORDEUM VULGARE); Oat (AVENA SATIVA); Cabbage (BRASSICA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Broadleaf weeds; Pepper (CAPSICUM FRUTESCENS); Foxtail, green (SETARIA VIRIDIS); Grasses
EXPERIMENTAL DOSE: 0.1 to 100 micro M
APPLICATION METHODS: Postemergence spray (assumed)
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as concentration causing 50% inhibition of root and shoot growth
EFFECTS: General slight damage to broadleaf plants and severe damage of grasses, especially roots
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<1222>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Sesame (SESAMUM INDICUM); Pigweed (AMARANTHUS sp.); Barley (HORDEUM VULGARE); Millet, Japanese (ECHINOCHLOA FRUMENTACEA)
EXPERIMENTAL DOSE: 3.0, 5.0, and 6.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley, mustard and Japanese millet planted as weed crop
EFFECTS: Good control of pigweed, millet, and barley at 5 lb/A without damaging sesame; 6 lb/A also gave good barley control and good sesame tolerance
COMMENTS: Nominal mustard stand even in untreated plots
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<1223>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 5.6 kg/ha
APPLICATION METHODS: Preemergence spray applied at varied intervals after planting 0, 2, 4, and 8 days)
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Leeper silty clay loam; pot culture
EFFECTS: Effective pigweed control at 2 days after planting with no adverse effect on cucumber
COMMENTS: For 3 weeks after planting, chloramben methyl ester gave complete weed control al all dates of application; DCPA and naptalam gave better weed control when applied at 0 and 2 days; diphenamid gave better control when applied at 0, 2, and 4 days following planting; cucumber survival reduced with application of all herbicides except naptalam at 4 days after planting
REFERENCE: Cole, A.W. and V.L. Etheridge, "Redroot Pigweed and Cucumber Response to Application Time of Herbicides," Advanc. Frontiers Plant Sci. 30:17-24 (1975).

<1224>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants; Pepper, pimento
EXPERIMENTAL DOSE: 2, 4, and 6 lb/A
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Effective weed control with no adverse effect on tomato and pimento
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<1225>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Pepper, hot (CAPSICUM ANNUUM); Santa Maria (PARTHENIUM HYSTEROPHORUS); Nutsedge, purple (CYPERUS ROTUNDUS); (CLEOME CILIATA); (BOERHAVIA DIFFUSA); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); Pinkroot (SPIGELIA ANTHELMIA); Junglerice (ECHINOCHLOA COLONUM); Wiregrass (ELEUSINE INDICA); Sandbur (CENCHRUS ECHINATUS)
EXPERIMENTAL DOSE: 4 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Seed bed trial; application 3 days before sowing
EFFECTS: Pepper seedling emergence and growth equal to hand-weeded plots; weed control barely satisfactory
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<1226>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adeguate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1227>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Oat (AVENA SATIVA); Oat (AVENA SATIVA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3.0 to 8.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; time period--1962 to 1964; residue effect on subsequent crops (oats and soybean) studied after one and two years
EFFECTS: Moderate weed control with no adverse effect on crop plants
COMMENTS: Simazine most effective for controlling annual weed species in asparagus; linuron, diphenamid, monuron, and DCPA controlled weed species; other herbicides tested less effective
REFERENCE: Sandhu, S.S. and J.K. Greig, "Effects of Herbicides on Asparagus and Weeds, and Residues Retained in the Soil," Am. Soc. Hort. Sci. 88:372-377 (1966).

<1228>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Goosegrass (ELEUSINE INDICA); Love-grass (ERAGROSTIS PECTINICEA); Nutsedge, purple (CYPERUS ROTUNDUS); Pigweed, spiny (AMARANTHUS SPINOSUS); Apple of Peru (NICANDRA PHYSOLODES); Purslane, common (PORTULACA OLERACEA); Floras paintbrush (EMILIA SONCHIFOLIA); Spurge, garden (EUPHORBIA HIRTA); Cabbage (BRASSICA OLERACEA); Cabbage, Chinese (BRASSICA PEKINENSIS); Mustard (BRASSICA CAMPESTRIS); Mustard, cabbage (BRASSICA CHINENSIS); Radish (RAPHANUS SATIVUS); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 6.0 lb/A

<1228>
<1228> CONT.
APPLICATION METHODS: Preemergence spray; 80 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; evaluation time--3 and 7 wk; sprinkler irrigation
EFFECTS: Effective control of weeds except apple of peru (no control) and severe injury to crop plants
COMMENTS: Vegadex and treflan found suitable herbicides while dymid very toxic to crop; selectivity not due to single factor but interaction of morphological, physiological, and genetical factors which made particular crop tolerant or susceptible
REFERENCE: Vahidy, A.A., "Differential Tolerance within Certain Cruciferous Crops to Vegadex, CIPC, Dymid and Treflan," Pak. J. Bot. 5(1):79-85 (1973).

<1229>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Posttransplant application; 43 gal/A
EXPERIMENTAL CONDITIONS: Field study; normal cultivation
EFFECTS: Poor-moderate weed control with no effect on vigor or yield of tobacco
COMMENTS: Diphenamid not one of more effective herbicides
REFERENCE: Chapman, W.H., "Weed Control and Crop Tolerance with Various Herbicides Applied to Florida Shade Tobacco", Proc. S. Weed Sci. Soc. 26:170-172 (1973).

<1230>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 6.7 kg/ha
APPLICATION METHODS: Preplant, preplant incorporated (6-7.5 cm depth), preemergence, and postemergence sprays; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: Moderate control of weeds in preplant incorporated application
COMMENTS: In direct-seeded tomatoes, FMC 25213 showed promise for providing broad spectrum weed control; CGA 24705 and Hoe 23408 found selective for annual grasses; with transplanted tomatoes, oxidiazon preplant and Hercules 26905 preplant incorporated provided effective weed control in addition to compounds mentioned for seeded crop
REFERENCE: Henne, R.C., "New Compounds with Potential for Weed Control in Tomatoes," Proc. Northeast. Weed Sci. Soc. 31:207-214 (1977).

<1231>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Millet, foxtail (SETARIA ITALICA); Quackgrass (AGROPYRON REPENS); Orchard grass (DACTYLIS GLOMERATA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Timothy (PHLEUM PRATENSE); Bromegrass, downy (BROMUS TECTORUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Oat (AVENA SATIVA); Barley (HORDEUM VULGARE); Wheat (TRITICUM AESTIVUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Smartweed, pale (POLYGONUM LAPATHIFOLIUM); Corn (ZEA MAYS); Sorghum (SORGHUM BICOLOR); Onion (ALLIUM CEPA); Cabbage (BRASSICA OLERACEA); Cucumber (CUCUMIS SATIVUS); Velvetleaf (ABUTILON THEOPHRASTI); Cotton (GOSSYPIUM HIRSUTUM); Sunflower (HELIANTHUS ANNUUS); Tomato (LYCOPERSICON ESCULENTUM); Jimsomweed (DATURA STRAMONIUM); Soybean (GLYCINE MAX); Pepper (CAPSICUM FRUTESCENS); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Buckwheat (FAGOPYRUM ESCULENTUM); Goosegrass (ELEUSINE INDICA); Rice (ORYZA SATIVA); Plantain, buckhorn (PLANTAGO LANCEOLATA); Chickweed, common (STELLARIA MEDIA); Foxtail, yellow (SETARIA GLAUCA); Foxtail, giant (SETARIA FABERI); Dock, curly (RUMEX CRISPUS); Asparagus (ASPARAGUS OFFICINALIS); Carrot (DAUCUS CAROTA); Sorrell, red (RUMEX ACETOSELLA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Witchgrass, old- (PANICUM CAPILLARE); Rocket, yellow (BARBAREA VULGARIS); Beet, sugar (BETA VULGARIS); Mustard, Chinese (BRASSICA JUNCEA); Turnip (BRASSICA RAPA); Crambe (CRAMBE ABYSSINICA); Trefoil, birdsfoot (LOTUS CORNICULATUS); Purslane, common (PORTULACA OLERACEA); Clover, white (TRIFOLIUM REPENS); Clover, red (TRIFOLIUM PRATENSE); Pennycress, field (THLASPI ARVENSE); Lettuce (LACTUCA SATIVA); Watermelon (CITRULLUS VULGARIS); Bean, snap (PHASEOLUS VULGARIS); Vernonia (VERNONIA ANTHELMINTICA); Bean, mung (PHASEOLUS AUREUS); Alfalfa (MEDICAGO SATIVA); Pea, sweet (PISUM SATIVUM); Muskmelon (CUCUMIS MELO); Eggplant (SOLANUM MELONGENA)
EXPERIMENTAL DOSE: 1 x 10(-6) M
APPLICATION METHODS: Soil (sand) incorporation
EXPERIMENTAL CONDITIONS: Greenhouse study; silica sand; dry seed; temperature--22 C; seed germination; evaluation time--3 to 5 day; darkness
EFFECTS: Root inhibition
COMMENTS: Direct correlation between this seed germination bioassay obtained in greenhouse experiments
REFERENCE: Deli, J. and G.F. Warren, "Relative Sensitivity of Plants to Diphenamid," Weed Sci. 19(1):70-72 (1972).

<1232>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Broadleaf weeds; Grasses; Azalea (RHODENDRON OBTUSUM); Azalea (RHODODENDRON INDICUM); Holly (ILEX CRENATA); Juniper (JUNIPERUS CHINENSIS); Privet, waxy (LIGUSTRUM ACIDUM)
EXPERIMENTAL DOSE: 5.6 and 22.4 kg/ha
APPLICATION METHODS: Incorporated on pine bark then applied as mulch to rooted cuttings; mulch depth--1.27 cm
EXPERIMENTAL CONDITIONS: Shade house; nursery container culture; time period--1970 and 1971
EFFECTS: Effective weed control at higher rate with no adverse effect on ornamentals
COMMENTS: All impregnated mulches except EPTC and diphenamid provided adequate long-season broadleaf weed

<1232> CONT.
control; long-season grass weed control acceptable with all herbicide-impregnated mulches except chlorpropham, chlorpropham plus PPG-124, and diphenamid; plant injury appeared on all five species of nursery stock with dichlobenil
REFERENCE: Fretz, T.A., "Herbicide-Impregnated Mulches for Weed Control in Container Nursery Stock," Sci. Hort. 1:165-170 (1973).

<1233>
CHEMICAL NAME: Benzeneacetamide, N,N-dimethyl-alpha-phenyl-
CHEMICAL COMMON NAME: Diphenamid
PLANT: Tobacco (NICOTIANA TABACUM); Crabgrass, large (DIGITARIA SANGUINALIS); Pusley, Florida (RICHARDIA SCABRA)
EXPERIMENTAL DOSE: 4.5 and 5.6 kg/ha
APPLICATION METHODS: Posttransplant
EXPERIMENTAL CONDITIONS: Field study; soils--Tifton sandy loam and Klej loamy fine sand; appropriate weed, hoed, and cultivated controls
EFFECTS: Damage to tobacco and yield reduction, but effective control of weeds
COMMENTS: After diphenamid treatment, tobacco generally did not differ from cultivated controls in yield or gross dollar returns; in contrast, mixture of benfluralin-pebulate increased dollar returns per hectare; most striking differences followed pebulate applied alone which increased tobacco yields, significantly increased dollar returns, and elevated the levels of total nitrogen and alkaloids in tobacco leaves; all herbicide treatments tended to improve the grading quality of Hicks tobacco
REFERENCE: Hauser, E.W. and J.D. Miles, "Flue-Cured Tobacco Yield and Quality as Affected by Weed Control Methods," Weed Res. 15(4):211-215 (1975).

<1234>
CHEMICAL NAME: Benzeneacetamide, 2-chloro-
PLANT: Linseed (LINUM USITATISSIMUM); Cabbage (BRASSICA OLERACEA); Turnip (BRASSICA RAPA); Beet, sugar (BETA VULGARIS); Onion (ALLIUM CEPA); Carrot (DAUCUS CAROTA); Lucerne (MEDICAGO SATIVA); Corn (ZEA MAYS); Wheat (TRITICUM AESTIVUM); Oat (AVENA SATIVA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Oat, wild (AVENA FATUA); Blackgrass (JUNCUS GERARDI); Chickweed, common (STELLARIA MEDIA); Poppy (PAPAVER sp.)
EXPERIMENTAL DOSE: 6 lb/A
APPLICATION METHODS: Preemergent spray
EXPERIMENTAL CONDITIONS: Plants harvested 3-5 weeks after spraying; results expressed as percent of fresh weight of controls; greenhouse study
EFFECTS: 0-12% poppy, chickweed, blackgrass, ryegrass, and lucerne yield; 13-37% carrot, cabbage, and linseed yield; 38-62% onion and turnip yield; 63-87% wheat, wild oat, and beet yield; 88-100% oat and corn yield
COMMENTS: Suggestion that compound warrents field testing made by researchers
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1235>
CHEMICAL NAME: Benzeneacetamide, 2-chloro-N-methyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--abnormal plant growth, more pronounced at 30 lb/A; pot test--abnormal growth, more pronounced at 30 lb/A; Petri dish test--110, 43, and 24% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1236>
CHEMICAL NAME: Benzeneacetamide, 2-chloro-N-methyl-N-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--slightly abnormal wheat growth and abnormal cabbage growth at 30 lb/A, normal wheat and slightly abnormal cabbage growth at 10 lb/A; Petri dish test--102, 37, and 42% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1237>
<1237>
CHEMICAL NAME: Benzeneacetamide, 2-chloro-N-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--normal plant growth; Petri dish test--88, 29, and 29% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1238>
CHEMICAL NAME: Benzeneacetamide, 2-chloro-N,N-dimethyl-
PLANT: Linseed (LINUM USITATISSIMUM); Cabbage (BRASSICA OLERACEA); Turnip (BRASSICA RAPA); Beet, sugar (BETA VULGARIS); Onion (ALLIUM CEPA); Carrot (DAUCUS CAROTA); Lucerne (MEDICAGO SATIVA); Corn (ZEA MAYS); Wheat (TRITICUM AESTIVUM); Oat (AVENA SATIVA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Oat, wild (AVENA FATUA); Blackgrass (JUNCUS GERARDI); Chickweed, common (STELLARIA MEDIA); Poppy (PAPAVER sp.)
EXPERIMENTAL DOSE: 2, 6, and 10 lb/A
APPLICATION METHODS: Preemergent spray
EXPERIMENTAL CONDITIONS: Plants harvested 3-5 weeks after spraying; results expressed as percent of fresh weight of controls; greenhouse study
EFFECTS: 2 lb/A--13-37% poppy, blackgrass, and ryegrass yield, 38-62% chickweed yield, 63-87% wheat, carrot, and onion yield, 88-100% yield of others; 6 lb/A--0-12% poppy, chickweed, blackgrass, and ryegrass yield, 38-62% carrot yield, 63-87% corn, lucerne, and cabbage yield, and 88-100% yield of others; 10 lb/A--63-87% linseed yield, 13-37% carrot, beet, and cabbage yield, and 0-12% yield of others, no data on onion or corn at 10 lb/A
COMMENTS: Suggestion that compound warrents field testing made by researchers
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1239>
CHEMICAL NAME: Benzeneacetamide, 3-chloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 10 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal wheat and ryegrass growth, abnormal cabbage growth; pot test--normal wheat but abnormal cabbage growth; Petri dish test--55, 23, and 22% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1240>
CHEMICAL NAME: Benzeneacetamide, 3-chloro-N-methyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 10 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal ryegrass, abnormal wheat, and slightly abnormal cabbage growth; pot test--abnormal growth, more pronounced in wheat; Petri dish test--114, 58, and 21% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1241>
CHEMICAL NAME: Benzeneacetamide, 3-chloro-N-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days

<1241> CONT.
after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--normal growth; Petri dish test--72, 58, and 51% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1242>
CHEMICAL NAME: Benzeneacetamide, 3-chloro-N,N-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 3, 10, and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data at 3 lb/A, normal wheat and ryegrass and slightly abnormal cabbage growth at 10 lb/A, abnormal growth at 30 lb/A; pot test--wheat growth abnormal, cabbage growth normal at 3 lb/A but no growth at 30 lb/A; Petri dish test--87, 36, and 27% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1243>
CHEMICAL NAME: Benzeneacetamide, 4-chloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--normal ryegrass growth, normal wheat growth at 10 lb/A but abnormal growth at 30 lb/A, abnormal cabbage growth; pot test--wheat growth normal at 10 lb/A but slightly abnormal at 30 lb/A, cabbage growth abnormal at 10 and 30 lb/A; Petri dish test--107, 47, and 45% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1244>
CHEMICAL NAME: Benzeneacetamide, 4-chloro-N-methyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--wheat and ryegrass growth normal at 10 lb/A but abnormal at 30 lb/A, cabbage growth abnormal at 10 lb/A but only slightly abnormal at 30 lb/A; pot test--abnormal wheat and cabbage growth, more pronounced at 30 lb/A; Petri dish test--110, 54, and 30% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1245>
CHEMICAL NAME: Benzeneacetamide, 4-chloro-N,N-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--abnormal growth, more pronounced at 30 lb/A; Petri dish test--110, 67, and 30% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1246>
<1246>
CHEMICAL NAME: Benzeneacetic acid
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--wheat growth normal at 10 lb/A and only slightly abnormal at 30 lb/A, cabbage growth abnormal; Petri dish test--103, 70, and 26% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1247>
CHEMICAL NAME: Benzeneacetic acid, alpha-(3-hydroxy-5-oxo-4-phenyl-2(5H)-furanylidene)-, methyl ester
CHEMICAL COMMON NAME: Vulpinic acid
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Growth reduction of wheat but no blockage of GA-stimulated pea growth
COMMENTS: Of 524 compounds examined, 71 were found highly active and further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<1248>
CHEMICAL NAME: Benzeneacetic acid, 2-chloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--wheat growth abnormal, cabbage growth severely abnormal with no growth at 30 lb/A; Petri dish test--51, 23, and 20% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1249>
CHEMICAL NAME: Benzeneacetic acid, 2-hydroxy-
PLANT: Clover, red (TRIFOLIUM PRATENSE)
EXPERIMENTAL DOSE: 1:20 dilution to undiluted filtrate
APPLICATION METHODS: Solution soak of pregerminated seed
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination for 24 hr prior to solution exposure; evaluation time--24 hr
EFFECTS: No inhibition of root elongation
COMMENTS: Inhibition of root-elongation by culture filtrates of R. LEGUMINICOLA mainly due to large amounts of cinnamic, phenylacetic, benzoic, and o-coumaric acids; in the case of R. SOLANI, it was restricted to phenylacetic and m-hydroxyphenylacetic acids in addition to an unidentified acid
REFERENCE: Mizuno, M., K. Kohmoto, S. Nishimura, and N. Nishihara, "Pathochemical Studies on Rhizoctonia Disease. V. Phytotoxic metabolites of RHIZOCTONIA LEGUMINICOLA," J. Fac. Agric. Tottori Univ. 9:1-7 (1974).

<1250>
CHEMICAL NAME: Benzeneacetic acid, 2-hydroxy-
PLANT: Bean, mung (PHASEOLUS AUREUS); Rice (ORYZA SATIVA); Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 10 to 300 ppm
APPLICATION METHODS: Immersion of presoaked seed in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; not fully described
EFFECTS: Suppressed radicle growth of germinating lettuce, rice, and mungbean seed in concentrations as low as 10 ppm
COMMENTS: Five phytotoxins found in decomposing rice residues; O-hydroxyphenylacetic acid revealed significant inhibition on radicle growth of rice and lettuce seeds and suppressed root initiation of mungbean seedlings; growth of rice seedlings retarded by decaying rice residues in soil
REFERENCE: Chou, C.-H. and H.J. Lin, "Autointoxication Mechanism of ORYZA SATIVA I. Phytotoxic Effects of Decomposing Rice Residues in Soil," Chem. Ecol. 2(3):353-367 (1976).

<1251>
CHEMICAL NAME: Benzeneacetic acid, 2-hydroxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 30, 26, 10, and 0% growth at 100, 200, 300, and 400 ppm, respectively
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<1252>
CHEMICAL NAME: Benzeneacetic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: Fenac
PLANT: Bursage, wollyleaf (FRANSERIA TOMENTOSA)
EXPERIMENTAL DOSE: 11.0, 22.0, and 28 kg/ha
APPLICATION METHODS: Soil sterilant application with and without incorporation; postemergence sprays at varied stages of plant development; liquid sprays at 188 l/ha; pellets or granules broadcast by hand; sodium salt formulation
EXPERIMENTAL CONDITIONS: Field study; non-crop areas; time period--1962 to 1968; evaluation time--up to 3 yr; soil--clay loam
EFFECTS: Effective control for at least 12 mos at 28.0 kg/ha rate
COMMENTS: Fenac controlled woollyleaf bursage for 3 years in noncropped areas; effective control of woollyleaf bursage obtained when treated at bud stage or earlier with ester formulation of 2,4-D
REFERENCE: Smith, D.T., A.F. Wiese, and A.W. Cooley, "Woollyleaf Bursage Response to Selected Herbicides," Weed Sci. 20(6):554-556 (1972).

<1253>
CHEMICAL NAME: Benzeneacetic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: Fenac
PLANT: Bluegrass, annual (POA ANNUA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preplant solution soak
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Puyallup fine sandy loam; pH--5.8; temperature--approx 60 F
EFFECTS: Moderate to effective bluegrass control with no adverse effect on bentgrass
COMMENTS: Dacthal, betasan, dipropalin, trifluralin, and enide significantly controlled annual bluegrass for periods of 9 to 12 weeks; dacthal and betasan completely nonphytotoxic to mature turf
REFERENCE: Goss, R.L., "Preemergence Control of Annual Bluegrass (POA ANNUA L.)," J. Agron. 56(1):479-481 (1964).

<1254>
CHEMICAL NAME: Benzeneacetic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: Fenac
PLANT: Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.1 to 5.0 lb/A; sodium salt
APPLICATION METHODS: Postemergence spray; 20, 40, and 60 gal/A at 20, 40, and 60 psi
EXPERIMENTAL CONDITIONS: Field study; volatility and drift studied
EFFECTS: Reduced soybean yield at all rates and reduced cotton yield at 0.5 to 5.0 lb rates
COMMENTS: PBA, 2,3,6-TBA, and fenac sprays applied safely for eradication of perennial weeds in and near cotton; use of these herbicides near soybeans hazardous because very small quantities caused leaf deformities and some loss in seed yield
REFERENCE: Wiese, A.F. and A.G. Martin, "Toxicity of Benzoic Acid Herbicides to Cotton and Soybeans," Weeds 11(1):7-10 (1963).

<1255>
CHEMICAL NAME: Benzeneacetic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: Fenac, sodium salt
PLANT: Witchweed (STRIGA ASIATICA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4, 8, and 12 lb/A
APPLICATION METHODS: Preplanting incorporated treatments
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications; corn planted 5, 10, and 20 days after treatment; soil--Lakeland sand
EFFECTS: 4 lb/A gave highest corn yield of all compounds tested; 8 and 12 lb/A gave excellent witchweed control but reduced corn stand
COMMENTS: Degree of witchweed control based on corn yield
REFERENCE: Robinson, F.L., Soil-incorporated Pre-planting Herbicides for Witchweed Control," Weeds 9(3):411-415 (1961).

<1256>
CHEMICAL NAME: Benzeneacetic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: Fenac
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bluegrass, annual (POA ANNUA); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 4.0 and 6.0 lb/A; sodium salt and amide
APPLICATION METHODS: Applied to soil surface as preemergence spray; 35 to 40 psi
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; herbicides applied and seed planted at monthly intervals to determine residual effect; time period--1958 and 1959
EFFECTS: Inhibited germination of turfgrasses and little or no control of crabgrass over 3 to 4 month period
COMMENTS: In pre-emergence crabgrass control study in turf, no significant differences found between calcium arsenate and arsenic complex + 7% nitrogen with respect to time of application; these herbicides

<1256>
<1256> CONT.
effectively controlled crabgrass; however, arsenic complex + 7% nitrogen injured turf; fenac formulations did not satisfactorily control crabgrass and severely injured turf; chlordane most effective when applied in the spring but did not satisfactorily control crabgrass
REFERENCE: Juska, F.V., "Pre-emergence Herbicides for Crabgrass Control and Their Effects on Germination of Turfgrass Species," Weeds 9(1):137-144 (1961).

<1257>
CHEMICAL NAME: Benzeneacetic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: Fenac
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 2.0 to 40.0 lb/A; sodium salt
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Killed at rate low as 2.5 lb/A
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most common phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<1258>
CHEMICAL NAME: Benzeneacetic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: Fenac
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: At 20.0 lb/A; effective control for prolonged period
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1259>
CHEMICAL NAME: Benzeneacetic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: Sodium TCPA
PLANT: Pine, Scots (PINUS SYLVESTRIS); Spruce, sitka (PICEA SITCHENSIS); Larch, Japanese (LARIX sp.)
EXPERIMENTAL DOSE: 0.1, 0.2 and 0.4%
APPLICATION METHODS: Treatment when most seedlings in young true leaf stage; spray at 100 gpa
EXPERIMENTAL CONDITIONS: Pot studies; spraying performed in greenhouse but pots placed outside for test; watering when necessary; acute and chronic toxicity assessed; weed control not studied
EFFECTS: 37, 21, and 82% kill of pine (after 2 mo), spruce (after 15 days), and larch (after 1 mo), respectively, at 0.4%; kills also recorded at 0.1 and 0.2%, all lower except 0.1% spruce kill of 26%
COMMENTS: Laboratory results on effect on germination of several pine species also reported
REFERENCE: Srivastava, T.N., "The Applications of Selective Herbicides to Forestry Practice," Indian For. 77:176-191 (1951).

<1260>
CHEMICAL NAME: Benzeneacetic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: Fenac
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 5.11 to 4.66 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<1261>
CHEMICAL NAME: Benzeneacetic acid, 3-chloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured

<1261> CONT.
EFFECTS: Box test--no data; pot test--abnormal wheat growth, no cabbage growth; Petri dish test--38, 21, and 20% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1262>
CHEMICAL NAME: Benzeneacetic acid, 3-hydroxy-
CHEMICAL COMMON NAME: M-hydroxyphenyl acetic acid
PLANT: Clover, red (TRIFOLIUM PRATENSE)
EXPERIMENTAL DOSE: 1:20 dilution to undiluted filtrate
APPLICATION METHODS: Solution soak of pregerminated seed
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination for 24 hr prior to solution exposure; evaluation time--24 hr
EFFECTS: Inhibition of root elongation
COMMENTS: Inhibition of root-elongation by culture filtrates of R. LEGUMINICOLA mainly due to large amounts of cinnamic, phenylacetic, benzoic, and o-coumaric acids; in the case of R. SOLANI, it was restricted to phenylacetic and m-hydroxyphenylacetic acids in addition to an unidentified acid
REFERENCE: Mizuno, M., K. Kohmoto, S. Nishimura, and N. Nishihara, "Pathochemical Studies on Rhizoctonia Disease. V. Phytotoxic metabolites of RHIZOCTONIA LEGUMINICOLA," J. Fac. Agric. Tottori Univ. 9:1-7 (1974).

<1263>
CHEMICAL NAME: Benzeneacetic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: 59-CS-52
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 4.34 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<1264>
CHEMICAL NAME: Benzeneacetic acid, 4-bromo-alpha-(4-bromophenyl)-alpha-hydroxy-, 1-methylethyl ester
CHEMICAL COMMON NAME: Bromopropylate
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to palm in test 1, no phytotoxicity observed in test 2; no effects on other species
COMMENTS: 2% EC formulation; trade name Acarol
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<1265>
CHEMICAL NAME: Benzeneacetic acid, 4-bromo-alpha-(4-bromophenyl)-alpha-hydroxy-, 1-methylethyl ester
CHEMICAL COMMON NAME: Acarol
PLANT: Cascara (RHAMNUS PURSHIANA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Florida beauty (DRACENA GODSEFFIANA); Holly, burford (ILLEX CORNUTA); Juniper (JUNIPERUS CHINENSIS); Privet (LIGUSTRUM JAPONICUM); Prayer plant (MARANTA LEUCONEURA); Red nerve plant (MARANTA RUBRANEURA); Fluffy ruffle (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Podocarpus (PODOCARPUS MAKI); Golden pothos (SCINDAPSUS AUREUS); Nephritis (SYNGONIUM PODOPHYLLUM)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A; EC; sticker-spreader (Plyac)
APPLICATION METHODS: Postemergence spray to run-off; 3X applications at weekly intervals
EXPERIMENTAL CONDITIONS: Greenhouse study; temperatures--80 to 85 F (day) and 62 to 68 F (night); RH--60 to 95%; evaluation time--1 wk
EFFECTS: Mostly no injury; but slight to moderate damage to schefflera, fluffy ruffle peperomia, and cordatum, and golden pothos most at 2X (1.0 lb/A) application rate
COMMENTS: Almost one-half plants exhibited some phytotoxic response; most sensitive plants were schefflera, fluffy ruffle fern, peperomia, and golden pothos; most toxic chemicals were plictran and omite and least phytotoxic materials were zectran and pirimor
REFERENCE: Short, D.E. and D.B. McConnell, "Pesticide Phytotoxicity to Ornamental Plants," Proc. Fla. St. Hort. Soc. 86:439-442 (1974).

<1266>
<1266>
CHEMICAL NAME: Benzeneacetic acid, 4-bromo-alpha-(4-bromophenyl)-alpha-hydroxy-, 1-methylethyl ester
CHEMICAL COMMON NAME: Bromopropylate
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to palm in test 1, no phytotoxicity observed in test 2; no effects on other species
COMMENTS: 2% EC formulation; trade name Acarol
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<1267>
CHEMICAL NAME: Benzeneacetic acid, 4-chloro-
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: 5 ml solution added to germinating seed in Petri dish
EXPERIMENTAL CONDITIONS: Seeds germinated then transferred to Petri dish; treatment solution added, root growth observed
EFFECTS: Petri dish test--81, 35, and 26% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1268>
CHEMICAL NAME: Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
CHEMICAL COMMON NAME: Acaraben
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 lb/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to schefflera, palm, and gardenia
COMMENTS: 4% EC formulation; rated unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<1269>
CHEMICAL NAME: Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
CHEMICAL COMMON NAME: Acaraben
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 lb/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to schefflera, palm, and gardenia
COMMENTS: 4% EC formulation; rated unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<1270>
CHEMICAL NAME: Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
CHEMICAL COMMON NAME: Chlorobenzilate
PLANT: Currant, black (RIBES NIGRUM)
EXPERIMENTAL DOSE: 0.1% solution
APPLICATION METHODS: Sprayed to run-off
EXPERIMENTAL CONDITIONS: 5 year old black currant bushes; once a year application at grape-stage; 3 season study; 3 replicates for each variety
EFFECTS: No injury
REFERENCE: Kirby, A.H.M. and M. Bennett, "Phytotoxicity Trials with Acaricides on Black Currant and Plum," Rep. E. Malling Res. Sta. 152-154 (1958).

<1271>
CHEMICAL NAME: Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
CHEMICAL COMMON NAME: Chlorobenzilate
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 4 lb/gal technical chlorobenzilate EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants

<1271> CONT.
once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Growth retardation and foliar injury at all but 0.031% concentration
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<1272>
CHEMICAL NAME: Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
CHEMICAL COMMON NAME: Chlorobenzilate
PLANT: Elm, American (ULMUS AMERICANA); Maple, sugar (ACER SACCHARUM); Oak, northern red (QUERCUS BOREALIS); Magnolia (MAGNOLIA GLAUCA); Wayfaring-tree (VIBURNUM LANTANA); Washington thorn (CRATAEGUS PHAENOPYRUM); Apple (PYRUS MALUS); Basswood (TILIA CORDATA); Lilac (SYRINGA sp.); Alder, black (ALNUS GLUTINOSA); Redbud (CERCIS CANADENSIS); Willow (SALIX sp.); Pine, white (PINUS STROBUS)
EXPERIMENTAL DOSE: 3% solution
APPLICATION METHODS: Solutions formulated with relatively non-phytotoxic Sovaspray 100 as carrier and commercial xylene as co-solvent; mist applied to point of drip off on both leaf surfaces
EXPERIMENTAL CONDITIONS: Acaricides--diluted 1 part acaricide concentrate to 4 parts carrier to give 3% toxicant formulation; insecticides--diluted 1 part concentrate to 4 parts carrier to give 5% toxicant formulation; concentrates formed by dissolving acaricides and insecticides in xylene; July and August treatments
EFFECTS: Severe injury--A. SACCHARUM and A. GLUTINOSA; moderate injury--U. AMERICANA, T. CORDATA, and SALIX spp.; slight injury to other species
COMMENTS: Chlorobenzilate--acaracide
REFERENCE: Clower, D.F. and J.G. Matthysse, "Phytotoxicity of Insecticides in Mist Concentrate Type Formulations," J. Econ. Entomol. 47(5):735-738 (1954).

<1273>
CHEMICAL NAME: Benzeneacetic acid, 4-hydroxy-
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:2000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<1274>
CHEMICAL NAME: Benzeneacetonitrile, alpha-phenyl-
CHEMICAL COMMON NAME: Diphenatrile
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 30 lb/A
APPLICATION METHODS: 1961--preemergence on May 31 and postemergence on June 6; 1962--preemergence on March 19 and postemergence on July 27
EXPERIMENTAL CONDITIONS: 3-year study; randomized block design, twelve 2 X 30 ft plots with 3 replicates, silt loam soil; visual assessment of bluegrass on September 29; oat and soybean planted in soil collected March 1963 to study persistence of compound
EFFECTS: 85% crabgrass control; 89% bluegrass cover; persistence into 1963 caused height reduction in bluegrass; no significant increase in bluegrass root length
COMMENTS: Bluegrass root, measurements taken March 1963
REFERENCE: Singh, R.K.N. and R.W. Campbell, "Herbicides on Bluegrass," Weeds 13(2):170-171 (1965).

<1275>
CHEMICAL NAME: Benzeneacetonitrile, alpha-phenyl-
CHEMICAL COMMON NAME: Diphenatrile
PLANT: Bluegrass, annual (POA ANNUA); Bluegrass, Kentucky (POA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Fescue, creeping red (FESTUCA RUBRA); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 30.0 lb/A
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study--emergence of seedlings (germination) studied in flat culture; evaluation time--seed planted up to 93 days after herbicide application
EFFECTS: Reduced germination of all species
COMMENTS: With few exceptions, herbicides retarded stand and vigor of turfgrasses seeded in turf killed with methyl bromide; chlordane was least and commercial arsenic complex plus 7% N most toxic to young seedlings; seedlings of Merion Kentucky bluegrass most resistent to herbicide injury; no appreciable decrease in original turf density noted except for arsenic complex material which severely injured bluegrass turf
REFERENCE: Juska, F.V. and A.A. Hanson, "Effect of Preemergence Crabgrass Herbicides on Seedling Emergence of Turfgrass Species," Weeds 12(2):97-101 (1964).

<1276>
<1276>
CHEMICAL NAME: Benzeneacetonitrile, alpha[[(diethoxyphosphinothioyl)oxy]imino]-
CHEMICAL COMMON NAME: Phoxim
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0, 16.0, and 32.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: At highest rates, slight to moderate leaf damage and stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<1277>
CHEMICAL NAME: Benzeneacetonitrile, 2-chloro-alpha-[[diethoxyphosphinothioyl]imino]-
CHEMICAL COMMON NAME: Chlorphoxim
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0, 16.0, and 32.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: At highest rates, leaf damage and stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<1278>
CHEMICAL NAME: Benzeneamine, N-(2-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: Penoxalin
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.25 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam
EFFECTS: Effective control of broadleaf weeds and moderate control of grasses with no adverse effect on corn yield
COMMENTS: Butylate and EPTC+R-25788 preplant incorporated applications provided excellent grassy weed control; fall panicum and crabgrass control obtained by various combination treatments which included alachlor, procyazine, atrazine, penoxalin, bifenox, metolachlor, or Vel 5026
REFERENCE: Vengris, J., "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 31:1-5 (1977).

<1279>
CHEMICAL NAME: Benzeneamine, N-(2-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: Penoxylin
PLANT: Cabbage (BRASSICA OLERACEA); Purslane, common (PORTULACA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pineappleweed (MATRICARIA MATRICARIOIDY)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplant incorporated; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; supplemental irrigation; crops direct seeded
EFFECTS: Effective control of purslane, moderate control of barnyardgrass, and very slight control of pineappleweed with slight cabbage phytotoxicity
COMMENTS: Outstanding candidates for selectivity in seeded cabbage and control of barnyardgrass, purslane, and pineappleweed were H22234 and oryzalin; alachlor also gave excellent control but initial stunting of cabbage seedlings; by end of the season, phytotoxicity not visible with alachlor or any other treatment.
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicides for Weed Control in Sweet Corn and Cabbage," Proc. Northeast. Weed Sci. Soc. 31:256-260 (1977).

<1280>
CHEMICAL NAME: Benzeneamine, N-(2-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: Penoxalin
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 12 locations in IA
EFFECTS: Moderate weed control
COMMENTS: Preplant-incorporated treatments more consistent in grass and broadleaf weed control than preemergence treatments; preplant-incorporated herbicide butylate plus R-25788 and EPTC plus R-25788 and preplant or preemergence chemical such as alachlor and CGA-24705 provided good to excellent grass control but needed assistance of broadleaf controlling herbicides such as atrazine, cyanazine, and procyazine
REFERENCE: Studt, D.M. and V.M. Jennings, "Corn Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:146-150 (1975).

<1281>
CHEMICAL NAME: Benzeneamine, N-(2-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: Penoxylin
PLANT: Soybean (GLYCINE MAX); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A; EC
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold loam; soybeans planted with no tillage in wheat stubble; evaluation time--1 mo; soybeans planted one day before herbicide applications
EFFECTS: Slight control of weeds with slight reduction in vigor of soybean
COMMENTS: Only paraquat and glyphosate applied alone gave good weed control; Paraquat and metribuzin reduced soybean stands but not seriously; alachlor and penoxalin did not control panicum; penoxalin or linuron in combination with glyphosate or paraquat improved control of many weed species over penoxalin and linuron applied alone; combinations of the two with either of the contact herbicides (3-way combinations) did not improve degree of control effected by single herbicides applied with paraquat or glyphosate; combinations of RH-2915 and alachlor did not improve weed control over either herbicide applied alone; considerable improvement resulted when glyphosate or paraquat added to the combination
REFERENCE: Michieka, R.W., R.D. Ilnicki, and J.B. Justin, "Weed Control in Double-Crop Soybeans with Herbicides Applied Alone and in Combination with Paraquat or Glyphosate," Proc. Northeast. Weed Sci. Soc. 31:61-69 (1977).

<1282>
CHEMICAL NAME: Benzeneamine, N-(2-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: Penoxalin
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Grasses
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: Postemergence and layby sprays; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: In preemergence, effective control of annual grasses and moderate control of remaining weeds with no adverse effect on potato yield; in layby, effective control of annual grasses and slight to moderate control of remaining weeds with slightly reduced potato yield
COMMENTS: Metolachlor applied preemergence and penoxalin applied layby did not provide satisfactory control of broadleaved weeds; none of the drag-off treatments with dinitramine, USB-3153, or trifluralin controlled broadleaved weeds; USB-3153 and trifluralin applied at drag-off did not give satisfactory control of quackgrass
REFERENCE: Murphy, H.J. and T. Gajewski, "Effect of Several Herbicides Applied Preemergence, at Drag-Off and Layby on Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 31:176-179 (1977).

<1283>
CHEMICAL NAME: Benzeneamine, N-(2-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: Penoxalin
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.75 and 1.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Effective control of pigweed and panicum and moderate control of other weeds with slight damage to corn (1.0 lb/A only)
COMMENTS: Penoxalin in combination with atrazine improved control of velvetleaf; control of lambsquarters and pigweed only slightly better than either herbicide applied alone; penoxalin in combination with cyanazine greatly improved control of lambsquarters, velvetleaf, and panicum with no appreciable increase in control of pigweed
REFERENCE: Ilnicki, R.D. and R.W. Michieka, "Penoxalin Alone and in Combination with Atrazine, Cyanazine, and RH-5205 for Weed Control in Corn," Proc. Northeast. Weed Sci. Soc. 31:6-10 (1977).

<1284>
CHEMICAL NAME: Benzeneamine, N-(2-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: Penoxalin
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 10 to 25 gal/A
EXPERIMENTAL CONDITIONS: Field study; 4 locations in ND, SD, and MN
EFFECTS: Effective weed control with no adverse effect on wheat yield
COMMENTS: Penoxalin preemergence or lightly incorporated treatment after seeding wheat gave excellent annual weed control and demonstrated good selectivity; penoxalin also demonstrated good to excellent weed control in potatoes either as preemergence or dragoff treatment; penoxalin treatments produced good yields in both crops
REFERENCE: Jorgenson, E.M., C.B. Wingfield, and G.I. Nzewi, "Use of Penoxalin Herbicide for Weed Control in Spring Grains and Potatoes," Proc. North Cent. Weed Cont. Conf. 30:72-74 (1975).

<1285>
CHEMICAL NAME: Benzeneamine, N-(2-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
CHEMICAL COMMON NAME: Penoxalin
PLANT: Plants; Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Witchgrass, old- (PANICUM CAPILLARE); Bluegrass, annual (POA ANNUA); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence spray and dragoff; 10 to 25 gal/A
EXPERIMENTAL CONDITIONS: Field study; 4 locations in ND, SD, and MN
EFFECTS: Moderate to effective weed control with no adverse effect on potatoes
COMMENTS: Penoxalin preemergence or lightly incorporated treatment after seeding wheat gave excellent annual

<1285>
<1285> CONT.
weed control and demonstrated good selectivity; penoxalin also demonstrated good to excellent weed control in potatoes either as preemergence or dragoff treatment; penoxalin treatments produced good yields in both crops
REFERENCE: Jorgenson, E.M., C.R. Wingfield, and G.I. Nzewi, "Use of Penoxalin Herbicide for Weed Control in Spring Grains and Potatoes," Proc. North Cent. Weed Cont. Conf. 30:72-74 (1975).

<1286>
CHEMICAL NAME: Benzenebutanoic acid
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 25, 50, 75, 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 85, 39, and 27% growth at 25, 50, and 75 ppm; respectively; no growth at higher
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<1287>
CHEMICAL NAME: Benzenecarbothioamide, 2,6-dichloro-
CHEMICAL COMMON NAME: Chlorothiamid
PLANT: Pondweed, sago (POTOMOGETON PECTINATUS); Pondweed, American (POTOMOGETON NODOSUS); Pondweed, curly-leaf (POTOMOGETON CRISPUS); Pondweed (POTOMOGETON PERFOLIATUS); (CHARA VULGARIS); Naiad (NAJAS MINOR); (HYDRILLA VERTICILLATA); Hornwort (CERATOPHYLLUM DEMERSUM); Water celery (VALISNERIA SPIRALIS); Linseed (LINUM USITATISSIMUM); Mustard (BRASSICA CAMPESTRIS); Gram (CICER ARIETINUM); Clover, Egyptian (TRIFOLIUM ALEXANDRINUM); Coriander (CORIANDRUM SATIVUM); Wheat (TRITICUM AESTIVUM); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 220 kg/ha
APPLICATION METHODS: Broadcast; G; into water; dipotassium salt
EXPERIMENTAL CONDITIONS: Application in stagnant and flowing water, stagnant water--pH-7.6, air temp--21 C, water temp--18 C; flowing water--velocity 0.4 km/hr, pH-8.0; air temp--28 C; water temp--22 C; conductivity--0.3 mmhos/cm; evaluation time--one and 8 or 9 wk; treated water used to irrigate crop plots
EFFECTS: Effective control of all water weeds except CHARA; no effect on crop plants
COMMENTS: Of 5 herbicidal treatments employed, chlorothiamid, endothall and 2,4-D killed all submerged water weeds; all crop plants resistant to herbides except gram (susceptible to endothall, dipot.) and rice (susceptible to diuron)
REFERENCE: Dutta, T.R., J. Prasad, and R.P. Singh, "Evaluation of Herbicides for Submerged Weeds in Chambal and Bhakra-Nangal Canal Systems," Indian J. Agric. Sci. 42(1):70-75 (1972).

<1288>
CHEMICAL NAME: Benzenecarbothioamide, 2,6-dichloro-
CHEMICAL COMMON NAME: Chlorthiamid
PLANT: Grape (VITIS VINIFERA)
EXPERIMENTAL DOSE: 100 and 1000 mg/l.
APPLICATION METHODS: Exposed plant roots placed in 1.0 liter herbicide solution for 1 hr; 7.5% G formulation
EXPERIMENTAL CONDITIONS: Pot studies; plastic pot (holes in bottom) with plant placed on top of another pot containing soil; after root growth through holes into second pot, plants carefully removed and placed on top of pot containing herbicide solution; 1-hr herbicide exposure
EFFECTS: Root kill at 100 and 1000 mg/l. but slight systemic foliage injury
COMMENTS: Commercially unavailable in U.S. at publication date
REFERENCE: Ahrens, J.F., O.A. Leonard, and N.R. Townley, "Chemical Control of Tree Roots in Sewer Lines," J. Water Pollut. Control Fed. 42(9):1643-1655 (1970).

<1289>
CHEMICAL NAME: Benzenecarbothioamide, 2,6-dichloro-
CHEMICAL COMMON NAME: Chlorthiamid
PLANT: Weeds; Spurrey, corn (SPERGULA ARVENSIS); Nettle, stinging (URTICA URENS); Chickweed, common (STELLARIA MEDIA); Chamomile, wild (MATRICARIA sp.); Lamb's-quarters (CHENOPODIUM ALBUM); Fumitory, common (FUMARIA OFFICINALIS); Knotweed (POLYGONUM AVICULARE); Ladysthumb (POLYGONUM PERSICARIA); Raspberry (RUBUS sp.)
EXPERIMENTAL DOSE: 4.62 kg/ha
APPLICATION METHODS: 7.5% granules applied as 1 m continuous band over raspberry canes
EXPERIMENTAL CONDITIONS: 3 trials, each consisting of 4 randomized blocks with an untreated control in each block; all sites weed free at time of treatment; sandy loam at sites 1 and 3, sandy clay loam at site 2; May treatments at sites 1 and 2, April treatment at 3
EFFECTS: Site 1--effective chickweed, wild chamomile, and total weed control; site 2--effective chickweed and total weed control; site 3--effective ladysthumb and total weed control; no apparent effect on raspberries
COMMENTS: Weeds identified under effects were predominant species present
REFERENCE: Allen, M.G., "Further Evaluation of Cyanazine and Cyanazine Mixtures For Selective Weed Control in Newly-Planted Raspberries," Proc. Brit. Weed Control Conf. 12(2):679-682 (1974).

<1290>
CHEMICAL NAME: Benzenemethanamine, 2-chloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml

<1290> CONT.
solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--normal wheat growth, abnormal cabbage growth; Petri dish test--101, 98, and 100% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1291>
CHEMICAL NAME: Benzenemethanaminium, N,N-dimethyl-N-octadecyl-, chloride
CHEMICAL COMMON NAME: Triton X-400
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<1292>
CHEMICAL NAME: Benzenemethanesulfonic acid, 2,4-dichlorophenyl ester
CHEMICAL COMMON NAME: Compound 923
PLANT: Oak, northern red (QUERCUS BOREALIS); Magnolia (MAGNOLIA GLAUCA); Wayfaring-tree (VIBURNUM LANTANA); Washington thorn (CRATAEGUS PHAENOPYRUM); Apple (PYRUS MALUS); Basswood (TILIA CORDATA); Lilac (SYRINGA sp.); Alder, black (ALNUS GLUTINOSA); Pine, white (PINUS STROBUS); Redbud (CERCIS CANADENSIS); Willow (SALIX sp.)
EXPERIMENTAL DOSE: 3% solution
APPLICATION METHODS: Solutions formulated with relatively non-phytotoxic Sovaspray 100 as carrier and commercial xylene as co-solvent; mist applied to point of drip off on both leaf surfaces
EXPERIMENTAL CONDITIONS: Acaricides--diluted 1 part acaricide concentrate to 4 parts carrier to give 3% toxicant formulation; insecticides--diluted 1 part concentrate to 4 parts carrier to give 5% toxicant formulation; concentrates formed by dissolving acaricides and insecticides in xylene; July and August treatments
EFFECTS: Severe injury--MALUS spp. and T. CORDATA; moderate injury to SYRINGA spp.; no injury to P. STROBUS; slight injury to other species
COMMENTS: Compound 923--acaracide
REFERENCE: Clower, D.F. and J.G. Matthysse, "Phytotoxicity of Insecticides in Mist Concentrate Type Formulations," J. Econ. Entomol. 47(5):735-738 (1954).

<1293>
CHEMICAL NAME: Benzenemethanol, alpha-[1-(methylamino)ethyl]-, [R-(R*,S*)]-
CHEMICAL COMMON NAME: Ephedrine
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<1294>
CHEMICAL NAME: Benzenemethanol, 3,4-dichloro-, methylcarbamate
CHEMICAL COMMON NAME: Dichlormate
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4) M
APPLICATION METHODS: Seed soaking in solutions for 24 hr. with shaking
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--24 C; in dark 6 da, then seedlings exposed to varying light intensities
EFFECTS: Inhibited carotene synthesis as well as altering other biochemical processes
COMMENTS: Amitrole, dichlormate, and pyriclor inhibited normal carotenogenesis in etiolated wheat seedlings; carotenoid precursors accumulated in treated plants; in dichlormate-treated plants, carotene accumulated, whereas phytofluene, phytoene, and carotene accumulated in amitrole-and pyriclor-treated plants
REFERENCE: Burns, E.R., G.A. Buchanan, and M.C. Carter, "Inhibition of Carotenoid Synthesis as a Mechanism of Action of Amitrole, Dichlormate, and Pyriclor," Plant Physiol. 47:144-148 (1971).

<1295>
CHEMICAL NAME: Benzenemethanol, 3,4-dichloro-, methylcarbamate
CHEMICAL COMMON NAME: Dichlormate
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lily-turf (LIRIOPE sp.); Plants
EXPERIMENTAL DOSE: 12.0 lb/A
APPLICATION METHODS: 5% G formulation; Dichlormate granules applied by hand
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate to Effective overall weed control with no adverse effect on LIROPE vigor.

<1295>
<1295> CONT.
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<1296>
CHEMICAL NAME: Benzenemethanol, 3,4-dichloro-, methylcarbamate
CHEMICAL COMMON NAME: UC-22463
PLANT: Peanut (ARACHIS HYPOGAEA); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 4.47, 4.48, 6.72, and 8.96 kg/ha
APPLICATION METHODS: Preemergence treatments in 279 l./ha water
EXPERIMENTAL CONDITIONS: Field experiments; May or June planting; half of plots planted 2 cm deep (shallow) and other half planted 4 cm deep (deep); wet (irrigated) and dry (unirrigated) plots; split-pot design with surface wetting as main plots and planting depth as subplots
EFFECTS: No significant yield reduction of peanuts; early chlorosis and stunting that disappeared; good weed control, best at 8.96 kg/ha; results influenced very little by planting depth and surface wetting differences--dry and deep conditions showed slightly more injury at 8.96 kg/ha
REFERENCE: Santelmann, P.W., R.S. Matlock, and L. Six, "Phytotoxicity of Herbicides to Spanish Peanuts (ARACHIS HYPOGAEA L.) as Influenced by Planting Depth and Simulated Rainfall," Crop Sci. 7:365-367 (1967).

<1297>
CHEMICAL NAME: Benzenemethanol, 3,4-dichloro-, methylcarbamate
CHEMICAL COMMON NAME: Dichlormate
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1298>
CHEMICAL NAME: Benzenemethanol, 3,4-dichloro-, methylcarbamate
CHEMICAL COMMON NAME: Sirmate
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.1 mM
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination in petri plates then placed in growth chamber
EFFECTS: Inhibited ribosome formation in chloroplasts
COMMENTS: Gamma-fret membranes, fraction 1 protein, and ribosomes absent in chloroplasts of Sirmate-treated, light-grown plants; loss of these chloroplast structures may be caused by absence of chloroplast ribosomes
REFERENCE: Bartels, P.G. and E.J. Pegelow, "The Action of Sirmate (3,4-Dichlorobenzyl Methylcarbamate) on Chloroplast Ribosomes of TRITICUM VULGARE L. Seedlings," J. Cell Biol. 37:C1-C6 (1968).

<1299>
CHEMICAL NAME: Benzenemethanol, 3,4-dichloro-, methylcarbamate
CHEMICAL COMMON NAME: Dichlormate
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 5 X 10(-4) M
APPLICATION METHODS: Immersion of seeds in test solutions for 24 hr with shaking
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination at 24 C in darkness; evaluation time--6 days
EFFECTS: Inhibited carotenoid synthesis
COMMENTS: Amitrole, dichlormate, and pyriclor inhibited normal carotenogenesis; carotenoid precursors accumulated in treated plants; none interfered with protochlorophyllide synthesis or its conversion to chlorophyllide when etiolated plants were illuminated
REFERENCE: Burns, E.R., G.A. Buchanan, and M.C. Carter, "Inhibition of Carotenoid Synthesis as a Mechanism of Action of Amitrole, Dichlormate, and Pyriclor," Plant Physiol. 47:144-148 (1971).

<1300>
CHEMICAL NAME: Benzenemethanol, 4-chloro-alpha-(4-chlorophenyl)-alpha-(trichloromethyl)
CHEMICAL COMMON NAME: Dicofol
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 1.3 lb and 1 and 2 pt/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to schefflera at 1 pt/100 gal; schefflera and palm at 2 pt/100 gal, and to schefflera, palm, and gardenia at 1.3 lb/100 gal; no injury to other species
COMMENTS: 18.5% EC (1 and 2 pt/100 gal) and 35% WP (1.3 lb/100 gal) formulations; trade name Kelthane
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<1301>
CHEMICAL NAME: Benzenemethanol, 4-chloro-alpha-(4-chlorophenyl)-alpha-(trichloromethyl)
CHEMICAL COMMON NAME: Dicofol
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% WP formulation, a 2 lb/gal technical dicofol EC formulation, and a 2 lb/gal miscibl e concentration formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No injury with WP formulation; growth reduction and foliar injury with other 2 formulations; miscible formulation more damaging than EC
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<1302>
CHEMICAL NAME: Benzenemethanol, 4-chloro-alpha-(4-chlorophenyl)-alpha-(trichloromethyl)-
CHEMICAL COMMON NAME: Dicofol
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 1.3 ml/l
APPLICATION METHODS: Postemergence spray to run-off
EXPERIMENTAL CONDITIONS: Greenhouse study; light intensity--21.6 klux; photoperiod--15 hr; 4 sprays at 10 day intervals
EFFECTS: Initial increase of photosynthesis but decreased at 10 days and measurements thereafter
COMMENTS: Multiple sprays of dicofol reduced photosynthesis of apple foliage significantly; reduction greater in Golden Delicious than in 'Delicious'; maximum decline occurred after the second spray and subsequent applications did not cause further decrease; multiple sprays of dodine had no significant influence on photosynthesis
REFERENCE: Sharma, D.P., D.C. Ferree, and F.O. Hartman, "Multiple Applications of Dicofol and Dodine Sprays on New Photosynthesis of Apple Leaves," Hortscience. 12(2):154-155 (1977).

<1303>
CHEMICAL NAME: Benzenemethanol, 4-chloro-alpha-(4-chlorophenyl)-alpha-(trichloromethyl)-
CHEMICAL COMMON NAME: Dicofol
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Dracena (DRACAENA SANDERIANA); Prayer plant (MARANTA LEUCONEURA); Sword-fern (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
EXPERIMENTAL DOSE: 0.2 and 0.4 lb/100 gal
APPLICATION METHODS: Formulation--18.5% EC at 1 and 2 pints respectively; 4 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume equivalent); Plyac (spreader-sticker) added to controls and treatments at rate of 2 oz/100 gal water; sprays applied prior to 10:00 a.m.; 5 tests from May to November; temperture--83 to 98 F (day) and 56 to 78 F (night); greenhouse conditions
EFFECTS: B. ACTINOPHYLLA--no injury at 0.2 lb, moderate injury at 0.4 lb (ring-like depression in upper leaf surface beneath residue); C. ELEGANS--no injury at 0.2 lb, slight injury at 0.4 lb (marginal chlorosis and necrosis); N. EXALTATA--no injury at 0.2 lb, slight injury at 0.4 lb (marginal chlorosis and necrosis, tip necrosis); no injury to other plants
COMMENTS: Experimental concentrations--recommended and twice the recommended rate
REFERENCE: Hamlen, R.A. and R.W. Henley, "Phytotoxicity to Tropical Foliage Plants of Repeated Insecticide and Miticide Applications Under Fiberglass-Covered Greenhouse Conditions," Proc. Fla. State Hort. Soc. 89:336-338 (1976).

<1304>
CHEMICAL NAME: Benzenemethanol, 4-chloro-alpha-(4-chlorophenyl)-alpha-(trichloromethyl)-
CHEMICAL COMMON NAME: Dicofol
PLANT: Tomato (LYCOPERSICON PIMPINELLIFOLIUM); Tomato (LYCOPERSICON PERUVIANUM); Tomato (LYCOPERSICON HIRSUTUM); Tomato (LYCOPERSICON ESCULENTUM); Petunia (PETUNIA sp.)
EXPERIMENTAL DOSE: 1000 ppm; EC
APPLICATION METHODS: Added (spray) to agar medium disk to run-off
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--15 hr; pollen germinated and length of germination tube measured
EFFECTS: Reduced germination and pollen tube growth
COMMENTS: Germination of petunia and tomato pollen completely inhibited by topical applications of naled; reduction in germination and tube elongation of pollen caused by parathion, azinphosmethyl, difocol, endosulfan, dichlorvos, DDT, and gardona
REFERENCE: Gentile, A.G., K.J. Gallagher, and Z. Santner, "Effect of Some Formulated Insecticides on Pollen Germination in Tomato and Petunia," J. Econ. Ent. 64(4):916-919 (1971).

<1305>
CHEMICAL NAME: Benzenemethanol, 4-chloro-alpha-(4-chlorophenyl)-alpha-methyl-
CHEMICAL COMMON NAME: Chlorfenethol
PLANT: Elm, American (ULMUS AMERICANA); Maple, sugar (ACER SACCHARUM); Oak, northern red (QUERCUS BOREALIS); Magnolia (MAGNOLIA GLAUCA); Wayfaring-tree (VIBURNUM LANTANA); Washington thorn (CRATAEGUS PHAENOPYRUM); Apple (PYRUS MALUS); Basswood (TILIA CORDATA); Lilac (SYRINGA sp.); Alder, black (ALNUS GLUTINOSA); Redbud (CERCIS CANADENSIS); Willow (SALIX sp.); Pine, white (PINUS STROBUS)
EXPERIMENTAL DOSE: 3% solution
APPLICATION METHODS: Solutions formulated with relatively non-phytotoxic Sovaspray 100 as carrier and commercial xylene as co-solvent; mist applied to point of drip off on both leaf surfaces
EXPERIMENTAL CONDITIONS: Acaricides--diluted 1 part acaricide concentrate to 4 parts carrier to give 3%

<1305>
<1305> CONT.
toxicant formulation; insecticides--diluted 1 part concentrate to 4 parts carrier to give 5% toxicant formulation; concentrates formed by dissolving acaricides and insecticides in xylene; July and August treatments
EFFECTS: Moderate injury--M. GLAUCA; slight injury--P. STROBUS; SYPINGA spp. killed; other species severely injured
COMMENTS: Chlorfenethol--acarcide, also known as DMC
REFERENCE: Clower, D.F. and J.G. Matthysse, "Phytotoxicity of Insecticides in Mist Concentrate Type Formulations," J. Econ. Entomol. 47(5):735-738 (1954).

<1306>
CHEMICAL NAME: Benzenepropanenitrile, alpha, 3-dichloro-2-methyl-
CHEMICAL COMMON NAME: PRB 8
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 100 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Promoted tuber sprouting
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<1307>
CHEMICAL NAME: Benzenepropanoic acid, alpha, 4-dichloro-, methyl ester
CHEMICAL COMMON NAME: AC92553
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 0.75 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Poor control of galinsoga and effective control of pigweed in preplanting application; no effect on beans
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<1308>
CHEMICAL NAME: Benzenepropanoic acid, alpha, 4-dichloro-, methyl ester
CHEMICAL COMMON NAME: AC-92553
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A; EC
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: In preemergence applications, moderate control of weeds with no adverse effect on corn
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<1309>
CHEMICAL NAME: Benzenepropanoic acid, alpha, 4-dichloro-, methyl ester
CHEMICAL COMMON NAME: AC-92390
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.8 and 1.7 kg/ha
APPLICATION METHODS: Preplant incorporation; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Bosket sandy loam and Sharkey clay
EFFECTS: Moderate control of johnsongrass at both rates with no adverse effect on soybeans
COMMENTS: On Bosket sandy loam soil, best average johnsongrass control over a 2-yr period obtained following profluralin and butralin; these treatments also resulted in highest average soybean yields
REFERENCE: McWhorter, C.G., "Johnsongrass Control in Soybeans with Soil-Incorporated Dinitroaniline Herbicides," Weed Sci. 25(3):264-267 (1977).

<1310>
CHEMICAL NAME: Benzenepropanoic acid, alpha, 4-dichloro-, methyl ester
CHEMICAL COMMON NAME: AC 92553
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence application; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (15-10-10) and diazinon (40 lb/A) applied before disking
EFFECTS: Moderate control of weeds with no corn injury
COMMENTS: Combination preemergence or postemergence treatments about as effective as herbicides alone
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<1311>
CHEMICAL NAME: Benzenepropanoic acid, alpha, 4-dichloro-, methyl ester
CHEMICAL COMMON NAME: AC-92553
PLANT: Grasses; Broadleaf weeds; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 10 locations in Iowa
EFFECTS: Moderate control of weeds with no adverse effect on soybeans
COMMENTS: Preplant incorporated herbicides trifluralin, dinitramine, profluralin, alachlor, and vernolate effectively reduced grassy weed populations; tank mix addition of metribuzin and bifenox broadened the spectrum of weeds controlled; overlay treatments of metribuzin were also equally effective in broadening the spectrum of weed control; preemergence treatments provided excellent examples of grass and broadleaf weed control in soybeans
REFERENCE: Jennings, V.M., "Soybean Herbicide Evaluations Across Iowa in 1974," Proc. North Cent. Weed Control Conf. 29:79-83 (1974).

<1312>
CHEMICAL NAME: Benzenepropanoic acid, alpha, 4-dichloro-, methyl ester
CHEMICAL COMMON NAME: AC-92,553
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS); Wheat (TRITICUM AESTIVUM); Rice (ORYZA SATIVA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.6 to 2.0 kg/ha; EC, WP, and G
APPLICATION METHODS: Preemergence and pre-plant incorporated; types of applications not specifically stated for varied studies
EXPERIMENTAL CONDITIONS: Field studies
EFFECTS: Moderate to effective control of weeds with no adverse effect on crops (increased yield in most cases) at 1.0 to 1.4 kg/ha
COMMENTS: As preplant incorporated application, excellent weed control obtained in cotton, soybeans, peanuts and other crops; AC-92,553 also applied pre-emergence; with this method, controlled most grasses and certain broadleaved weeds in maize, wheat, and rice
REFERENCE: Sprankle, P.L., "AC-92,553, Selective Herbicide for Weed Control in Cereals and Other Crops," Proc. 12th British Weed Cont. Conf. 2:825-830 (1974).

<1313>
CHEMICAL NAME: Benzenepropanoic acid, alpha, 4-dichloro-, methyl ester
CHEMICAL COMMON NAME: Chlorfenprop-methyl
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 3.98, 4.25, and 0.8 to 8.0 lb/A; 1.6%
APPLICATION METHODS: 1.6% concentration painted on by brush; postemergence spray with different spray nozzles and different volume rates
EXPERIMENTAL CONDITIONS: Six experiments; spray techniques, rates, and point of contact examined; greenhouse and field studies
EFFECTS: Good wild oat control
COMMENTS: Recommended rate, 4.25 lb/A, applied at mean leaf stage 2.5; adequate spray cover of vital parts (base of plant) essential--achieved by fan nozzles spraying 25 gpa at 40 psi
REFERENCE: Martin, T.J., D.B. Morris, and C.E. Rieley, "Studies on the Action and Efficiency of Chlorfenprop-methyl Against AVENA FATUA L (Spring Wild Oats)," Proc. Brit. Weed Control Conf. 11:209-217 (1972).

<1314>
CHEMICAL NAME: Benzenepropanoic acid, alpha, 4-dichloro-, methyl ester
CHEMICAL COMMON NAME: Chlorphenprop-methyl
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.05 microliters
APPLICATION METHODS: Application to leaf sheath and to proximal half of first leaf
EXPERIMENTAL CONDITIONS: Chlorphenprop-methyl prepared as 1% aqueous emulsion -- 0.05 microliters of emulsion applied to plant; pot studies--set up in field and in greenhouse
EFFECTS: Leaf sheath application--100% kill of all wild oat varieties; application to proximal half of first leaf (10 varieties of wild oat) -- 90% or greater kill of 6 varieties, 86% kill of 1 variety, less than 40% kill of 3 varieties
COMMENTS: Chlorphenprop-methyl -- active incredient of chemical called bidisin; limited systemic action; 2-leaf stage more susceptible than 3- to 4-leaf stage, conducive early growth conditions = greater recovery from treatment; good wild oat control when spray applied to base of plant at volume of 600 to 800 l./ha water
REFERENCE: Hack, H., "Study of the Translocation of Bidisin in Wild Oats (AVENA FATUA L.), with Special Consideration to the Reaction of Different Varieties and Cereal Pflanzenschutz-Nachr." 26(3):353-367 (1973).

<1315>
<1315>
CHEMICAL NAME: Benzenepropanoic acid, alpha, 4-dichloro-, methyl ester
CHEMICAL COMMON NAME: Chlorfenprop-methyl
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Timothy (PHLEUM PRATENSE); Speedwell, creeping (VERONICA FILIFORMIS); Fescue (FESTUCA PRATENSIS)
EXPERIMENTAL DOSE: 4.75 and 14.25 kg/ha
APPLICATION METHODS: Postemergence spray; 337 l./ha at 2.07 bars pressure with Tee jets
EXPERIMENTAL CONDITIONS: Field study; applied at 2-3 leaf stage and tillering
EFFECTS: Very slight adverse effect on all grasses at both growth-stage applications at normal rate (4.75 kg/ha)
COMMENTS: All varieties susceptible to isoproturon, except at tillering stage, and to difenzoquat; perennial and Italian ryegrass varieties resistant to all other herbicides; all high-rate applications, and normal rate of difenzoquat, checked timothy
REFERENCE: Oswald, A.K. and R.J. Hagger, "The Tolerance of Ten Grass Varieties to Six Herbicides With a Potential for Wild Oat Control in Herbage Seed Crops," Proc. 12th. Br. Weed Cont. Conf. 2:715-722 (1974).

<1316>
CHEMICAL NAME: Benzenepropanoic acid, alpha, 4-dichloro-, methyl ester
CHEMICAL COMMON NAME: Chlorfenprop-methyl
PLANT: Oat, wild (AVENA FATUA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 4.3 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays; 20 gal/A at 32 lb/sq in; and broadcast (G)
EXPERIMENTAL CONDITIONS: Field study; 13 sites in Britain; time period--1970-1972
EFFECTS: Moderate control of A. FATUA with no adverse effect on wheat; preemergence application more effective than postemergence
COMMENTS: Best control obtained from pre-emergence tri-allate granules and chlortoluron, and late post-emergence benzoylprop-ethyl; all treatments tended to perform less well at highest weed populations; good yield responses obtained
REFERENCE: Proctor, J.M. and D.B. Livingston, "Chemical Control of AVENA FATUA in Winter Wheat," Proc. 11th. Br. Weed Cont. Conf. 11(1):288-293 (1972).

<1317>
CHEMICAL NAME: Benzenepropanoic acid, alpha, 4-dichloro-, methyl ester
CHEMICAL COMMON NAME: Chlorfenprop-methyl
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Timothy (PHLEUM PRATENSE); Cocksfoot; Fescue (FESTUCA PRATENSIS)
EXPERIMENTAL DOSE: 4.75 and 14.25 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: All grasses resistant to damage at normal (lower) rate
COMMENTS: Isoproturon caused severe damage to all grasses except when sprayed 8 weeks after cereal harvest; established cock's-foot notably resistant; difenzoquat damaged all grasses even when established, while ethofumesate checked establishing grasses sown in August; none of the other herbicides affected the perennial and Italian rye-grasses; timothy most susceptible, especially to herbicides applied at high doses
REFERENCE: Oswald, A.K., "The Effects of Six Herbicides With a Potential for Wild-Oat Control on Ten Direct and Undersown Grasses," Proc. 1976 Br. Crop Protection Conf. 3:989-999 (1976).

<1318>
CHEMICAL NAME: Benzenepropanoic acid, alpha, 4-dichloro-, methyl ester
CHEMICAL COMMON NAME: Chlorfenprop-methyl
PLANT: Oat, wild (AVENA FATUA); Oat (AVENA SATIVA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 4.84 kg/ha
APPLICATION METHODS: Postemergence spray at 45 psi and 40 gpa water; early and late applications to separate plots 1 to 2 weeks apart
EXPERIMENTAL CONDITIONS: Trials conducted on commercial ryegrass fields; 3 x 10 m plots in 3 radomized blocks; 2 test sites
EFFECTS: Moderate A. FATUA control; no visible A. SATIVA control
REFERENCE: Mead, H., B.L. Ross, and R.J. Finch, "Preliminary Investigations on the Control of Wild-Oat (AVENA FATUA L.) Cultivated Oak (AVENA SATIVA L.) and Blackgrass (ALOPECURUS MYOSUROIDES HUDS.) in Seed Crops of Various Varieties of Perennial and Italian Ryegrass," Proc. Brit. Weed Control Conf. 12(2):707-714 (1974).

<1319>
CHEMICAL NAME: Benzenepropanoic acid, 1,2-dibromo
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Slight phytotoxic effect of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1320>
CHEMICAL NAME: Benzenepropanoic acid, 4-hydroxy-
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:2000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<1321>
CHEMICAL NAME: Benzenesulfonamide, N-ethyl-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Moderate damage of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1322>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: EL-119
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 1.0 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: In preemergence application, EL-119 gave commercially acceptable weed control and crop yield; in combination with metribuzin, improved control of weeds with little adverse effects on crop beans
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<1323>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: EL-119
PLANT: Broadleaf weeds; Grasses; Nutsedge, yellow (CYPERUS ESCULENTUS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplant incorporated by drag-off; 38 gal/A at 20 psi; 75% WP Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of grass weeds, moderate control of broadleafs, no control of nutsedge and no adverse effect on potato yield
COMMENTS: Incorporated type treatments effective in giving season-long annual grass control, but pre-emergence treatments were not; EPTC only effective material on heavy stand of nutsedge
REFERENCE: Sanok, W.J., "Evaluation of Herbicides for Control of Weeds in Long Island Potatoes-1973," Proc. Northeast. Weed Sci. Soc. 28:282-286 (1974).

<1324>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: Oryzalin
PLANT: Purslane, common (PORTULACA OLERACEA); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.5, 0.75 and 1 lb/A
APPLICATION METHODS: Formulation -- 75% WP; sprays applied in 50 gallon solution per acre; preplanting application of 1, 0.75 and 0.5 lb/A; postplanting application of 1 lb/A
EXPERIMENTAL CONDITIONS: Chrysanthemums commercially grown two seasons on gravelly sandy loam; roots dipped in activated carbon to reduce herbicide injury to chrysanthemums
EFFECTS: First growing season, purslane satisfactorily controlled with 0.75 lg/A; second growing season, 0.5 lb/A satisfactorily controlled purslane; minor injury to chrysanthemums with preplanting application; no injury to chrysanthemums with postplanting application
COMMENTS: During first growing season, flooding affected herbicide incorporation and chrysanthemum growth; no treatment controlled weeds all season without injury to chrysanthemums; use of multiple applications not thoroughly investigated; suggestions given for sequential herbicide use
REFERENCE: Ahrens, J.F., "Weed Control in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 28:386-394(1974).

<1325>
<1325>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: Oryzalin
PLANT: Cabbage (BRASSICA OLERACEA); Purslane, common (PORTULACA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pineappleweed (MATRICARIA MATRICARIODY)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplant incorporated; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; supplemental irrigation; crops direct seeded
EFFECTS: Effective control of weeds except pineappleweed (moderate control) with slight phytotoxicity to cabbage
COMMENTS: Outstanding candidates for selectivity in seeded cabbage and control of barnyardgrass, purslane, and pineappleweed were H22234 and oryzalin; alachlor also gave excellent control but initial stunting of cabbage seedlings; by end of the season, phytotoxicity not visible with alachlor or any other treatment.
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicides for Weed Control in Sweet Corn and Cabbage," Proc. Northeast. Weed Sci. Soc. 31:256-260 (1977).

<1326>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: Oryzalin
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-4)M; poor-moderate control at 10(-6) and 10(-7)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1327>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: Oryzalin
PLANT: Plants; Stonecrop (SEDUM BREVIFOLIUM); (DELASPERMA ALBA); Ivy, Algerian (HEDERA sp.); (OSTEOSPERMUM FRUT.); Iceplant (CARPOBROTUS EDULE); Periwinkle, large (VINCA MAJOR)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil-sandy loam; evaluation times--1, 2, 6, and 9 mos
EFFECTS: Effective control (up to 3 mos) of weeds with slight damage to ground cover plants
COMMENTS: Use of herbicides significantly less expensive than hand weeding; all herbicide treated plots of iceplant had greater fresh weight and rooting than non-weeded controls; oxadiazon, oryzalin, and nitrofen + nitralin appeared most effective
REFERENCE: Elmore, C.L. and W.A. Humphery, "Preemergence Weed Control in Ground Cover Ornamentals," Proc. West. Soc. Weed. Sci. 27:62-65 (1974).

<1328>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: Oryzalin
PLANT: Soybean (GLYCINE MAX); Velvetleaf (ABUTILON THEOPHRASTI); Millet, foxtail (SETARIA ITALICA)
EXPERIMENTAL DOSE: 1X10(-5), 1X10(-6), and 1X10(-7)M
APPLICATION METHODS: Solution addition to sand (75 ml/pot in greenhouse study); solution addition to nutrient agar (laboratory study)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand culture in pots (cups); temperature--21 C (day) and 17 C (night); evaluation time--28 days; laboratory study; temperature--30 C in darkened incubator
EFFECTS: At 1X10(-5)M, reduced growth of all test plants
COMMENTS: Dinitramine most toxic to each species; dinitramine, trifluralin, and BAS-3921 H most inhibitory of soybean shoot growth, while oryzalin, dinitramine, and BAS-3921 H most inhibitory of root growth
REFERENCE: Harvey, R.G., "Relative Phytotoxicities of Dinitroaniline Herbicides," Weed Sci. 21(6):517-520 (1973).

<1329>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: Oryzalin
PLANT: Broadleaf weeds; Grasses; Bean, pinto (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/A
APPLICATION METHODS: Preplant spray (incorporated, 3.5 in. depth) and preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--Tripp sandy loam and Bridgeport loam; two locations in Nebraska
EFFECTS: Moderte control of weeds with slight initial injury (one trial) to field bean but no adverse effect on bean yield
COMMENTS: Weed control and field bean yields higher when EPTC, trifluralin, and alachlor incorporated than when applied 4 days after planting and rotary hoed; best results with alachlor resulted when applied preemergence; best control of black nightshade was with EPTC and alachlor or these herbicides in combinations with other herbicides
REFERENCE: Fenster, C.R. and G.A. Wicks, "Weed Control in Field Beans in Nebraska," Proc. N. Centr. Weed Contr. Conf. 26:50-52 (1971).

<1330>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: Oryzalin
PLANT: Foxtail, giant (SETARIA FABERI); Wheat (TRITICUM AESTIVUM); Spurge, spotted (EUPHORBIA MACULATA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Cocklebur, common (XANTHIUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 1.00, 1.25, 1.50, 2.00, 2.50, 3.00, and 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 18 to 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; no-tillage soybean cultivation following wheat; paraquat plus linuron or metribuzin used as preemergence application for resistant broadleafs; time period--1975 and 1976; soils--silt loam, silty clay loam, and loam
EFFECTS: At 1.25 lb/A, effective control of spurge, moderate control of volunteer wheat and foxtail with little or no adverse effect on ragweed , cocklebur, and soybean
COMMENTS: Oryzalin may be applied as an overtop spray (OTS) on wheat and still provide acceptable weed control in succeeding no-till planted soybean crop; at herbicidally efficacious rates 1.0 to 1.5 lb/A, oryzalin caused no adverse effects to wheat when applied at the jointing stage of development and only slight effects when applied to fully tillered wheat
REFERENCE: Lynn, L.B., M.L. Jones, W.E. Rogers, and G.J. Shoop, "Oryzalin Applied Overtop Wheat for Weed Control in Soybeans Planted in the Stubble Following Wheat Harvest," Proc. Northeast. Weed Sci. Soc. 31:46-53 (1977).

<1331>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: Oryzalin
PLANT: Broadleaf weeds; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.0, 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Preplant and preemergence sprays; 80 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Effective control of broadleafs at all rates and moderate control of grasses at 3.0 lb/A with no adverse effect on potato yield
COMMENTS: Most herbicides somewhat ineffective for annual grass control; S-6044, MSB20035, and oxadiazolin all ineffective for control of annual grasses; combinations of oryzalin with metribuzin, methazole, and linuron also provided good broadleaved weed and quackgrass control; oryzalin alone not effective for annual grass or quackgrass control
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in White Potatoes in Maine - 1973," Proc. Northeast. Weed Sci. Soc. 28:287-295 (1974).

<1332>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: Oryzalin
PLANT: Pea, sweet (PISUM SATIVUM); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTTION THEOPHRASTI); Mustard, wild (BRASSICA KABER); Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.84 and 1.68 kg/ha
APPLICATION METHODS: Solution addition to pea seed (germination); field spray 187 l/ha at 183 kg/sq cm; soil incorporation preplant
EXPERIMENTAL CONDITIONS: Greenhouse study--plastic cup culture (germination); silica sand; 21 C (day) and 17 C (night), evaluation time-21 days; field study; soil--Plano silt loam, pH-6.3, evaluation time--21 days and at harvest
EFFECTS: No adverse effect on pea with effective control of weeds
COMMENTS: Field trials conducted over 3-yr period demonstrated that all eight herbicides successfully controlled weeds; use of trifluralin resulted in lowest shelled pea yields; significant reductions in yield occurred from trifluralin in 1973 and 1975 when compared with the untreated checks
REFERENCE: Harvey, R.G. and G.L. Jacques, "Dinitroaniline Herbicides for Weed Control in Peas," Weed Sci. 25(3):256-259 (1977).

<1333>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: Oryzalin
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 1.0, 1.25, 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Preemergence treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: Very minor soybean injury (vigor reduction); excellent control of pigweed and lambsquarter, good to excellent foxtail control, and unsatisfactory nutsedge control
COMMENTS: Herbicide combinations also tested
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<1334>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: Oryzalin
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 micro M to 1.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplast and mung bean hypocotyl assays; evaluation time--up to 3 hr
EFFECTS: Strong inhibition of one or more cyclic or noncyclic photophosphorylation reactions, mitochondrial oxidation of varied substrates, and ATPase activity

<1334>
<1334> CONT.
COMMENTS: 2,6-dinitroanilines inhibited both electron transport and phosphorylation in isolated chloroplasts and mitochondria; interference with photoproduction of ATP chloroplasts evidenced by increased sensitivity of photophosphorylation over the coupled photoreduction to the 2,6-dinitroanilines when water served as electron donor, and by inhibition of photophosphorylation mediated by PMS in an argon atmosphere
REFERENCE: Moreland, D.E., F.S. Farmer, and G.G. Hussey, "Inhibition of Photosynthesis and Respiration by Substituted 2,6-Dinitroaniline Herbicides," Pest. Biochem. & Phys. 1:342-353 (1971).

<1335>
CHEMICAL NAME: Benzenesulfonamide, 4-(dipropylamino)-3,5-dinitro-
CHEMICAL COMMON NAME: Oryzalin
PLANT: Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, or postemergence sprays; 80 gal/A at 40 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; soil--Caribon gravelly silt loam
EFFECTS: At 3.0 lb/A (preemergence application), moderate weed control with no adverse effect on potato
COMMENTS: Oryzalin, oryzalin plus metribuzin, and RE 17111 did acceptable job of controlling mustard, lambsquarters, bindweed, ladysthumb, and chickweed; in one test, trifluralin, EPTC, EL-161, oryzalin, or metribuzin did not control quackgrass
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in Potatoes With Several Pre-Plant Incorporated, Preemergence, and Early Post Emergence Herbicides," Proc. N.E. Weed Sci. Soc. 30:235-238 (1976).

<1336>
CHEMICAL NAME: Benzenesulfonamide, 4-amino-
PLANT: Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 122, 184, and 368 ppm
APPLICATION METHODS: Soil treatment to growing plants
EXPERIMENTAL CONDITIONS: Basal dose of nitrogen (60 lb/A ammonium sulphate0 and phosphorus (75 lb/A) added at planting; pot studies; 184 and 368 ppm doses added to soil at third month; 122 ppm added to another set of pots at fourth month; periodic observations made
EFFECTS: All leaves became chlorotic within one week; root and shoot retardation; plants died within one month at 184 and 368 ppm
COMMENTS: Numerous factors responsible for observed effects on sugarcane
REFERENCE: Rao, M.S.S., R.B. Prasad, and K.L. Khanna, "On the Influence of Sulpha Drugs in Sugarcane," Proc. Indian Acad. Sci., Sect. B 45:225-233 (1957).

<1337>
CHEMICAL NAME: Benzenesulfonamide, 4-amino-
CHEMICAL COMMON NAME: Sulphanilamide
PLANT: Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 0.005, 0.025, 0.05, 0.025, and 0.5 M
APPLICATION METHODS: Root apices treated
EXPERIMENTAL CONDITIONS: 1 to 24 hr treatment; fixed in carnoy's fluid; cells examined microscopically--aberrations identified
EFFECTS: Ten types of aberrations--spindle shifting in metaphase, spindle shifting in anaphase, topokinesis, breakages, bridges, chromosome diminution, and forwards
COMMENTS: Aberrations more numerous as concentration and exposure time increase
REFERENCE: Sharma, C.B.S.R., "Cytological Effects of Sulphanilamide on the Root Apices of ALLIUM CEPA," Indian J. Biochem. Biophys. 8:324-326 (1971).

<1338>
CHEMICAL NAME: Benzenesulfonamide, 4-amino-N-(aminoiminomethyl)-
PLANT: Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 122, 184, and 368 ppm
APPLICATION METHODS: Soil treatment to growing plants
EXPERIMENTAL CONDITIONS: Basal dose of nitrogen (60 lb/A ammonium sulphate) and phosphorus (75 lb/A) added at planting; pot studies; 184 and 368 ppm doses added to soil at third month; 122 ppm added to another set of pots at fourth month; periodic observations made
EFFECTS: All leaves became entirely chlorotic within one week at 184 and 368 ppm; no chlorosis or growth retardation at 122 ppm; root and shoot growth inhibited; 368 killed plants within a month
COMMENTS: Numerous factors responsible for observed effects on sugarcane
REFERENCE: Rao, M.S.S., R.B. Prasad, and K.L. Khanna, "On the Influence of Sulpha Drugs in Sugarcane," Proc. n i n . S ., S . B 45:225-233 (1957).

<1339>
CHEMICAL NAME: Benzenesulfonamide, 4-amino-N-methyl-2-pyrimidinyl)-
PLANT: Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 122, 184, and 368 ppm
APPLICATION METHODS: Soil treatment to growing plants
EXPERIMENTAL CONDITIONS: Basal dose of nitrogen (60 lb/A ammonium sulphate0 and phosphorus (75 lb/A) added at planting; pot studies; 184 and 368 ppm doses added to soil at third month; 122 ppm added to another set of pots at fourth month; periodic observations made
EFFECTS: Very minor chlorosis; root growth retardation proportional to concentration; minor shoot retardation at 184 ppm, more pronounced at 368 ppm
COMMENTS: Numerous factors responsible for observed effects on sugarcane
REFERENCE: Rao, M.S.S., R.B. Prasad, and K.L. Khanna, "On the Influence of Sulpha Drugs in Sugarcane," Proc. Indian Acad. Sci., Sect. B 45:225-233 (1957).

<1340>
CHEMICAL NAME: Benzenesulfonamide, 4-amino-N-2-pyrimidinyl-
PLANT: Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 122, 184, and 368 ppm
APPLICATION METHODS: Soil treatment to growing plants
EXPERIMENTAL CONDITIONS: Basal dose of nitrogen (60 lb/A ammonium sulphate0 and phosphorus (75 lb/A) added at planting; pot studies; 184 and 368 ppm doses added to soil at third month; 122 ppm added to another set of pots at fourth month; periodic observations made
EFFECTS: All leaves became entirely chlorotic within one week at 184 and 368 ppm; no chlorosis or growth retardation at 122 ppm; root and shoot growth inhibited; 368 killed plants within a month
COMMENTS: Numerous factors responsible for observed effects on sugarcane
REFERENCE: Rao, M.S.S., R.B. Prasad, and K.L. Khanna, "On the Influence of Sulpha Drugs in Sugarcane," Proc. Indian Acad. Sci., Sect. B 45:225-233 (1957).

<1341>
CHEMICAL NAME: Benzenesulfonamide, 4-amino-N-2-thiazolyl-
PLANT: Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 122, 184, and 368 ppm
APPLICATION METHODS: Soil treatment to growing plants
EXPERIMENTAL CONDITIONS: Basal dose of nitrogen (60 lb/A ammonium sulphate0 and phosphorus (75 lb/A) added at planting; pot studies; 184 and 368 ppm doses added to soil at third month; 122 ppm added to another set of pots at fourth month; periodic observations made
EFFECTS: Chlorosis confined to intercostal regions; growth retardation at 184 ppm, more pronounced at 368 ppm; no chlorosis at 122 ppm
COMMENTS: Numerous factors responsible for observed effects on sugarcane
REFERENCE: Rao, M.S.S., R.B. Prasad, and K.L. Khanna, "On the Influence of Sulpha Drugs in Sugarcane," Proc. Indian Acad. Sci., Sect. B 45:225-233 (1957).

<1342>
CHEMICAL NAME: Benzenesulfonamide, 4-bromo-N-(2-chlorophenyl)-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Severe damage to peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1343>
CHEMICAL NAME: Benzenesulfonamide, 4-bromo-N-(2-methylphenyl)-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse phytotoxic effect
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1344>
CHEMICAL NAME: Benzenesulfonamide, 4-bromo-N-(3-chlorophenyl)-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Slight phytotoxic effect of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1345>
<1345>
CHEMICAL NAME: Benzenesulfonamide, 4-bromo-N-(4-chlorophenyl)-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Moderate damage of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1346>
CHEMICAL NAME: Benzenesulfonamide, 4-bromo-N-pentylmethyl-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse phytotoxic effect
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1347>
CHEMICAL NAME: Benzenesulfonamide, 4-bromo-N-phenylmethyl-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Slight phytotoxic effect of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1348>
CHEMICAL NAME: Benzenesulfonate, dodecyl-, polyoxyelthylene ester of mixed fatty acids and resin acids
CHEMICAL COMMON NAME: ER-10
PLANT: Lychee (LITCHI CHINENSIS)
EXPERIMENTAL DOSE: 1:500 and 1:1000
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Local chlorosis at leaf tip
COMMENTS: Lychee leaves susceptible to ionic and nonionic surfactants; injury due to wetting agents ranged from complete necrosis of leaves to chlorosis and mottling and premature leaf fall
REFERENCE: Nakata, S. and Y. Tanada, "Phytotoxicity of Wetting Agents on Lychee," J. Econ. Ent. 54(6):1074-1076 (1961).

<1349>
CHEMICAL NAME: Benzenesulfonate, dodecyl-, triethanolamine salt
CHEMICAL COMMON NAME: CLE
PLANT: Lychee (LITCHI CHINENSIS)
EXPERIMENTAL DOSE: 1:1000, 1:2000, and 1:4000
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Local chlorosis at leaf tip
COMMENTS: Lychee leaves susceptible to ionic and nonionic surfactants; injury due to wetting agents ranged from complete necrosis of leaves to chlorosis and mottling and premature leaf fall
REFERENCE: Nakata, S. and Y. Tanada, "Phytotoxicity of Wetting Agents on Lychee," J. Econ. Ent. 54(6):1074-1076 (1961).

<1350>
CHEMICAL NAME: Benzenesulfonic acid, dodecyl-, ammonium salt
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: No survival of PHALAENOPSIS at 1000 ppm and reduced survival at 100 ppm; no growth of EPIDENDRUM at 100 and 1000 ppm
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<1351>
CHEMICAL NAME: Benzenesulfonic acid, 4-chloro-, 4-chlorophenyl ester
CHEMICAL COMMON NAME: Chlorfenson
PLANT: Currant, black (RIBES NIGRUM); Plum (PRUNUS sp.)
EXPERIMENTAL DOSE: 0.1 and 0.5%
APPLICATION METHODS: Sprayed to runoff; WP formulation for plum tree treatments; 0.1% for black current test and 0.5% for plum tests
EXPERIMENTAL CONDITIONS: Black current--5 year old bushes, once a year treatment at grape stage, 3 replicates for each variety, 3 season study; plum--20 plots with 6 trees of each variety per plot, 3 season study, 2 application times tested (mid-May and June)
EFFECTS: No injury
REFERENCE: Kirby, A.H.M. and M. Bennett, "Phytotoxicity Trials with Acaricides on Black Currant and Plum," Rep. E. Malling Res. Sta. 152-154 (1958).

<1352>
CHEMICAL NAME: Benzenesulfonic acid, 4-chloro-, 4-chlorophenyl ester
CHEMICAL COMMON NAME: Chlorfenson
PLANT: Plum (PRUNUS DOMESTICA); Currant, black
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Foliar spray; 100 and 200 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; time period--1953 to 1955
EFFECTS: No adverse effects on either variety
COMMENTS: Some marginal scorch developed on black currant leaves sprayed with lime-sulphur but no leaf damage was seen on any bushes; no influence on blossom or fruit-set detected
REFERENCE: Kirby, A.H.M. and M. Bennett, "Phytotoxicity Trials with Acaricides on Black Currant and Plum," Rep. E. Malling Res. Sta. 152-154(1958).

<1353>
CHEMICAL NAME: Benzenesulfonic acid, 4-chloro-, 4-chlorophenyl ester
CHEMICAL COMMON NAME: Chlorfenson
PLANT: Elm, American (ULMUS AMERICANA); Maple, sugar (ACER SACCHARUM); Oak, northern red (QUERCUS BOREALIS); Magnolia (MAGNOLIA GLAUCA); Wayfaring-tree (VIBURNUM LANTANA); Washington thorn (CRATAEGUS PHAENOPYRUM); Apple (PYRUS MALUS); Basswood (TILIA CORDATA); Lilac (SYRINGA sp.); Alder, black (ALNUS GLUTINOSA); Redbud (CERCIS CANADENSIS); Willow (SALIX sp.); Sourwood (OXYDENDRUM ARBOREUM); Red willow (CORNUS AMOMUM); (DEUTZIA SCABRA); Privet (LIGUSTRUM OBTUSIFOLIUM); Honeysuckle (LONICERA sp.); Spiraea, false (SORBARIA SORBIFOLIA); Spindle-tree (EUONYMUS BUNGEANUS); Horsechestnut (AESCULUS PARVIFLORA); Arrow-wood (VIBURNUM DILATATUM); Hydrangea (HYDRANGEA sp.); Smoke-tree (COTINUS COGGYGRIA); Yellowwood (CLADRASTIS LUTEA); Lilac (SYRINGA JAPONICA); Lilac (SYRINGA VILLOSA); Pine, white (PINUS STROBUS)
EXPERIMENTAL DOSE: 3% solution
APPLICATION METHODS: Solutions formulated with relatively non-phytotoxic Sovaspray 100 as carrier and commercial xylene as co-solvent on both leaf surfaces
EXPERIMENTAL CONDITIONS: Acaricides--diluted 1 part acaricide concentrate to 4 parts carrier to give 3% toxicant formulation; insecticides--diluted 1 part concentrate to 4 parts carrier to give 5% toxicant formulation; concentrates formed by dissolving acaricides and insecticides in xylene; July and August treatments
EFFECTS: Severe injury--D. SCABRA, LONICERA spp., V. DILATATUM; moderate injury--A. SACCHARUM, V. LANTANA, C. PHAENOPYRUM, T. CORDATA, SYRINGA spp., SALIX spp., S. SORBIFOLIA, C. COGGYGRIA, S. JAPONICA, S. VILLOSA; no injury to M. GLAUCA; slight injury to other species
COMMENTS: Chlorfenson-acaracide, trade name Ovotran
REFERENCE: Clower, D.F. and J.G. Matthysse, "Phytotoxicity of Insecticides in Mist Concentrate Type Formulations," J. Econ. Entomol. 47(5):735-738 (1954).

<1354>
CHEMICAL NAME: Benzenesulfonic acid, 4-chlorophenyl ester
CHEMICAL COMMON NAME: Fenson
PLANT: Currant, black (RIBES NIGRUM)
EXPERIMENTAL DOSE: 0.1% solution
APPLICATION METHODS: Sprayed to run-off
EXPERIMENTAL CONDITIONS: 5 year old black currant bushes; once a year application at grape-stage; 3 season study; 3 replicates for each variety
EFFECTS: No injury
REFERENCE: Kirby, A.H.M. and M. Bennett, "Phytotoxicity Trials with Acaricides on Black Currant and Plum," Rep. E. Malling Res. Sta. 152-154 (1958).

<1355>
<1355>
CHEMICAL NAME: Benzenesulfonic acid, 4-chlorophenyl ester
CHEMICAL COMMON NAME: Fenson
PLANT: Plum (PRUNUS DOMESTICA); Currant, black
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Foliar spray; 100 and 200 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; time period--1953 to 1955
EFFECTS: No adverse effects on either variety
COMMENTS: Some marginal scorch developed on black currant leaves sprayed with lime-sulphur but no leaf damage was seen on any bushes; no influence on blossom or fruit-set detected
REFERENCE: Kirby, A.H.M. and M. Bennett, "Phytotoxicity Trials with Acaricides on Black Currant and Plum," Rep. E. Malling Res. Sta. 152-154(1958).

<1356>
CHEMICAL NAME: Benzenesulfonic acid, 4-chlorophenyl ester
CHEMICAL COMMON NAME: Fenson
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 40 fl oz/100 gal
APPLICATION METHODS: Postemergence spray; normal dosage spray contained 0.05% active ingredient; miscible formulation plus wetting agent
EXPERIMENTAL CONDITIONS: Crops greenhouse grown; 3 replications; once, twice, and five times normal dosage tested
EFFECTS: Slight damage at normal dosage; higher dosages caused severe cucumber damage but still slight tomato damage; tomato damage--tip scorch, mild chlorosis, leaf curl; cucumber damage--bad scorch, marked leaf curl, twisted main stem, and death of growing point
COMMENTS: Technical commercially produced grades of chemicals used
REFERENCE: Dennis, E.B. and C.A. Edwards,"Phytotoxicity of Insecticides and Acaricides," Plant Pathol. 10(2):54-60 (1961).

<1357>
CHEMICAL NAME: Benzimidazole-2-methanethiol, 1H-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 2x10(-3)M
APPLICATION METHODS: 96-hr treatment at 25 C
EXPERIMENTAL CONDITIONS: Primary root elongation inhibition determined
EFFECTS: 50% root growth inhibition
REFERENCE: Klingensmith, M.J., "The Effect of Certain Benzazole Compounds on Plant Growth and Development," Am. J. Bot. 48:40-45 (1961).

<1358>
CHEMICAL NAME: Benzimidazole-2-thione, 1,3-dihydro-2H-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 7x10(-4)M
APPLICATION METHODS: 96-hr treatment at 25 C
EXPERIMENTAL CONDITIONS: Primary root elongation inhibition determined
EFFECTS: No inhibition
REFERENCE: Klingensmith, M.J., "The Effect of Certain Benzazole Compounds on Plant Growth and Development," Am. J. Bot. 48:40-45 (1961).

<1359>
CHEMICAL NAME: Benzimidazole, 1H-
PLANT: Cucumber (CUCUMIS SATIVUS); Barley (HORDEUM VULGARE); Bean, bush (PHASEOLUS HUMILIS)
EXPERIMENTAL DOSE: 1x10(-5), 5x10(-5), 1x10(-4), 5x10(-4), 1x10(-3), 5x10(-3), and 1x10(-2)M
APPLICATION METHODS: Root growth tests--96-hr treatments at 25 C; morphological studies--test compound added to soil in 25 ml aqueous solution (tomato plants when tested received 50 ml)
EXPERIMENTAL CONDITIONS: Root growth tests--inhibition of cucumber root and effect on dry weight of barley roots determined; morphological changes in bean studied, plants grown in 75 g vermiculite in plastic pots
EFFECTS: Root growth--50% inhibition of cucumber at 1x10(-3)M and 100% inhibition at 1x10(-4)M, dry weight of barley decreased about 75% at 1x10(-3)M and about 100% at 1x10(-4)M; morphological changes--1x10(-2)M caused drying of intercostal leaf tissue of 18-day-old bean plants, 3x10(-3)M caused mottled-green appearing bean leaves instead of drying
COMMENTS: Barley weight study--essentially a study of conversion of endosperm to root tissue by young seedlings
REFERENCE: Klingensmith, M.J., "The Effect of Certain Benzazole Compounds on Plant Growth and Development," Am. J. Bot. 48:40-45 (1961).

<1360>
CHEMICAL NAME: Benzimidazole, 1H-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 0.001M
APPLICATION METHODS: Injection of 300ml fluid of test solution
EXPERIMENTAL CONDITIONS: Two 3-year old peach trees; injection holes drilled 30cm above soil line; trees injected while dormant, at bud swell stage, and at full leaf stage
EFFECTS: No injury
COMMENTS: 0.001M concentration dissolved in 0.1M dimethyl sulfoxide did not increase injury; effect on peach mosaic virus (strain PM-4) and necrotic ringspot virus also investigated
REFERENCE: Pine, T.S., "Reactions of Peach Trees and Peach Tree Viruses to Treatment with Dimethyl Sulfoxide and Other Chemicals," Phytopathology 57: 671-673 (1967).

<1361>
CHEMICAL NAME: Benzimidazole, 1H-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse phytotoxic effect
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1362>
CHEMICAL NAME: Benzimidazole, 2-(trifluoromethyl)-1H-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Slight to moderate damage to plants at 40 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light.
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1363>
CHEMICAL NAME: Benzimidazole, 4-bromo-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Moderate to severe damage to plants at 2.5 to 70.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1364>
CHEMICAL NAME: Benzimidazole, 4-bromo-6-nitro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Slight to severe damage to plants at 2.5 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1365>
<1365>
CHEMICAL NAME: Benzimidazole, 4-chloro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Moderate to severe damage to plants at 4.0 to 100 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1366>
CHEMICAL NAME: Benzimidazole, 4-chloro-6-nitro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Severe damage to all plants at 2.5 to 3.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1367>
CHEMICAL NAME: Benzimidazole, 4-nitro-5-chloro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Slight to moderate damage to plants at 10.0 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1368>
CHEMICAL NAME: Benzimidazole, 4-nitro-5,6-dichloro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 10 to 20 oz/A
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Moderate to severe damage to plants at 10.0 to 20.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1369>
CHEMICAL NAME: Benzimidazole, 4-nitro-6-bromo-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature 22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Severe damage to all plants at 2.5 to 10.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1370>
CHEMICAL NAME: Benzimidazole, 4-nitro-6-chloro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Severe damage to plants at 2.5 to 10.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1371>
CHEMICAL NAME: Benzimidazole, 4,5-dichloro-2-(trifluoromethyl)-1H-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Slight to severe damage to plants at 2.5 to 160 oz/A
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1372>
CHEMICAL NAME: Benzimidazole, 4,5-dichloro-2-(trifluoromethyl)-1H-
CHEMICAL COMMON NAME: Chloroflurazole
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1373>
CHEMICAL NAME: Benzimidazole, 4,5-dichloro-6-nitro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 40 to 650 oz/A
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: None to moderate damage to plants at 40 to 650 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1374>
CHEMICAL NAME: Benzimidazole, 4,5,6-trichloro-2-(trifluoromethyl)-1H-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Severe damage to plants at 2.5 to 10.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1375>
<1375>
CHEMICAL NAME: Benzimidazole, 4,5,6,7-tetrachloro-2-(trifluoromethyl)-1H-
EXPERIMENTAL DOSE: 1.0 to 600 oz/A
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: None to severe damage to plants at 1.0 to 600 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1376>
CHEMICAL NAME: Benzimidazole, 4,6-dibromo-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Severe damage to all plants at 2.5 to 5.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1377>
CHEMICAL NAME: Benzimidazole, 4,6-dichloro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Moderate to severe damage to plants at 2.5 to 10.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1378>
CHEMICAL NAME: Benzimidazole, 4,6-dichloro-5-nitro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160 oz/A
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Slight to severe damage to plants at 2.5 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1379>
CHEMICAL NAME: Benzimidazole, 4,6-dinitro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Slight to severe damage to plants at 2.5 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1380>
CHEMICAL NAME: Benzimidazole, 4,6,7-tribromo-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1.0 to 67.0 oz/A
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Moderate to severe damage to plants at 1.0 to 67.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1381>
CHEMICAL NAME: Benzimidazole, 4,6,7-trichloro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Slight to severe damage to plants at 2.5 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1382>
CHEMICAL NAME: Benzimidazole, 4,7-dibromo-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.6 to 750 oz/A
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: None to severe damage to plants at 0.6 to 750 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1383>
CHEMICAL NAME: Benzimidazole, 4,7-dichloro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Moderate damage to plants at 40.0 to 80.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1384>
CHEMICAL NAME: Benzimidazole, 5-amino-2-(trifluoromethyl)-, dihydrochloride
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Slight to moderate damage to plants at 85 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1385>
<1385>
CHEMICAL NAME: Benzimidazole, 5-bromo-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage: acetone solution, 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaulation time--7 da
EFFECTS: Moderate to severe damage to plants at 2.5 to 50 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light.
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1386>
CHEMICAL NAME: Benzimidazole, 5-chloro-1H-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1x10(-4) M
APPLICATION METHODS: 96-hr treatment at 25 C
EXPERIMENTAL CONDITIONS: Primary root elongation inhibition determined
EFFECTS: 50% root growth inhibition
REFERENCE: Klingensmith, M.J., "The Effect of Certain Benzazole Compounds on Plant Growth and Development," Am. J. Bot. 48:40-45 (1961).

<1387>
CHEMICAL NAME: Benzimidazole, 5-chloro-2-(trifluoromethyl)-1H-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage: acetone solution, 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaulation time--7 da
EFFECTS: Slight to severe damage to plants at 10 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light.
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1388>
CHEMICAL NAME: Benzimidazole, 5-chloro-6-nitro-2-(trifluoromethyl)-1H-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Moderate to severe damage to plants at 2.5 to 20.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1389>
CHEMICAL NAME: Benzimidazole, 5-cyano-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Moderate to severe damage to plants at 2.5 to 70.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1390>
CHEMICAL NAME: Benzimidazole, 5-cyano-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Slight to severe damage of plants at 2.5 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and

<1390> CONT.
death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1391>
CHEMICAL NAME: Benzimidazole, 5-fluoro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage: acetone solution, 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaulation time--7 da
EFFECTS: Slight to moderate damage to plants at 40 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light.
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1392>
CHEMICAL NAME: Benzimidazole, 5-iodo-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Slight to severe damage to plants at 2.5 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1393>
CHEMICAL NAME: Benzimidazole, 5-methoxy-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage: acetone solution, 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaulation time--7 da
EFFECTS: Slight to moderate damage to plants at 80 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light.
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1394>
CHEMICAL NAME: Benzimidazole, 5-methyl-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage: acetone solution, 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaulation time--7 da
EFFECTS: Slight to moderate damage to plants at 40 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light.
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1395>
CHEMICAL NAME: Benzimidazole, 5-nitro-2-(trifluoromethyl)-1H-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Moderate to severe damage to plants at 2.5 to 110 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and

<1395>
<1395> CONT.
death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1396>
CHEMICAL NAME: Benzimidazole, 5-pivalyl-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage: acetone solution, 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaulation time--7 da
EFFECTS: Slight to moderate damage to plants at 40 to 160 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light.
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1397>
CHEMICAL NAME: Benzimidazole, 5,6-dibromo-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Moderate to severe damage to plants at 3.0 to 55.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1398>
CHEMICAL NAME: Benzimidazole, 5,6-dichloro-2-(trifluoromethyl)-1H-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5 to 160.0 oz/A (up to 10 lb/A)
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Moderate to severe damage to plants at 2.5 to 80.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1399>
CHEMICAL NAME: Benzimidazole, 5,6-dinitro-2-(trifluoromethyl)-
PLANT: Pea, sweet (PISUM SATIVUM); Mustard, Chinese (BRASSICA JUNCEA); Linseed (LINUM USITATISSIMUM); Buckwheat (FAGOPYRUM ESCULENTUM); Beet, sugar (BETA VULGARIS); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 40 to 80 oz/A
APPLICATION METHODS: Spray application to foliage; acetone solution; 80 gal/A
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; photoperiod--14 hr; evaluation time--7 da
EFFECTS: Moderate damage to all plants at 40.0 to 80.0 oz/A
COMMENTS: Typical symptoms induced by active members of series were rapid loss of turgidity, necrosis, and death of plant within about four days; in most resistant species, necrotic areas confined to areas of spray drop retention; no evidence of significant translocation and rate of necrosis appeared independent of light
REFERENCE: Burton, D. E., A. J. Lambie, J. C. L. Ludgate, G. T. Newbold, A. Percival, and D. T. Saggers, "2-Trifluoromethylbenzimidazoles: A New Class of Herbicidal Compounds," Nature 208:1166-1169 (1965).

<1400>
CHEMICAL NAME: Benzo[a]pyrene
PLANT: Kalanchoe (KALANCHOE DIAGREMONTIANA); (BRYOPHYLLUM CALYCINUM); (NICOTINIA GLAUCA); Sunflower (HELIANTHUS ANNUUS); Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.0 to 3.0% in hydrous lanolin
APPLICATION METHODS: Lanolin applied to decapitated plants or to injured (needle prick) stem soft tissue
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Varied cancerous growths induced in plants with carcinogenic agents or growth substances
COMMENTS: Scharlach red found active in some cases with KALANCHOE DAIGREMONTIANA; application to apical internode after decapitation produced overgrowths which resembled crown galls; other carcinogens like 1,2,5,6-dibenzanthracene,3,4-benzpyrene, methylcholanthrene induced necrosis of treated zone;

<1400> CONT.
indoleacetic acid in lanolin on decapitated and injured stems induced root formation; stems cracked and small nodular masses formed; small overgrowths on decapitated kalanchoes present histological pictures identical with crown gall
REFERENCE: Levine, M., "Plant Responses to Carcinogenic Agents and Growth Substances: Their Relation to Crown Gall and Cancer," Bull. Torrey Bot. Club 67:199-226 (1940).

<1401>
CHEMICAL NAME: Benzoate, n-butyl-2-propoxy-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1402>
CHEMICAL NAME: Benzofuranone, 5-chloro-3(2H)-
PLANT: Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 40 mg of lanolin preparation (1% experimental compound)
APPLICATION METHODS: Applied directly to primary leaf pulvinus
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No effect noted
COMMENTS: 4-chlorophenoxyacetic acid very active as was 4-chlorophenyl ester; slight effect noted within two days after application; within ten days stems badly swollen and trifoliate leaves dwarfed
REFERENCE: Kalinowski, M.L. and L.W. Kalinowski, "Cyclization of Phenoxyacetic Acid and Some Chlorophenoxyacetic Acids," J. Chem. Soc. 70:1970-1971 (1948).

<1403>
CHEMICAL NAME: Benzoic acid
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 100 ppm
EXPERIMENTAL CONDITIONS: Isolated from decomposing plant matter
EFFECTS: Inhibition of seedling root elongation
COMMENTS: Phytotoxin production and analysis--main emphasis of paper
REFERENCE: Toussoun, T.A., A.R. Weinhold, R.G. Linderman, and Z.A. Patrick, "Nature of Phytotoxic Substances Produced during Plant Residue Decomposition in Soil," Phytopathol. 58:41-45 (1968).

<1404>
CHEMICAL NAME: Benzoic acid
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 25, 50, 75, 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 77, 57, 27, and 40% growth at 25, 50, 75, and 100 ppm, respectively; no growth at higher concentrations
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<1405>
CHEMICAL NAME: Benzoic acid, chloro-
CHEMICAL COMMON NAME: Chlorobenzoic acid
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1406>
<1406>
CHEMICAL NAME: Benzoic acid, m-(3-ethyl-2-thioureido)-, butyl ester
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, 200, and 400 mg/l.
APPLICATION METHODS: Plants grown on agar medium containing test compound
EXPERIMENTAL CONDITIONS: One series of tests at all concentrations, then 2 experiments with 3 replications using 200 mg/l.; diuron used as a standard; root length expressed as percent of untreated control determined
EFFECTS: Wheat root length 57.68%, radish root length 60.95%
COMMENTS: 3.99 and 8.53% root length of wheat and radish, respectively due to diuron; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G.N., L.K. Iliev, and R.T. Vassileva, "Chemical Structure and Herbicidal Activity of Certain Esters of the m- and p- ethylthioureidobenzoic acids and of 3-Ethyl-4-oxo-2-thion-1,2,3,4-tetrahydro-quinazoline," C. R. Acad. Bulg. Sci. 22(9):1031-1034 (1969).

<1407>
CHEMICAL NAME: Benzoic acid, m-(3-ethyl-2-thioureido)-, ethyl ester
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, 200, and 400 mg/l.
APPLICATION METHODS: Plants grown on agar medium containing test compound
EXPERIMENTAL CONDITIONS: One series of tests at all concentrations, then 2 experiments with 3 replications using 200 mg/l.; diuron used as a standard; root length expressed as percent of untreated control determined
EFFECTS: Wheat root length 29.74%, radish root length 48.42%
COMMENTS: 3.99 and 8.53% root length of wheat and radish, rspectively due to diruon; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G.N., L.K. Iliev, and R.T. Vassileva, "Chemical Structure and Herbicidal Activity of Certain Esters of the m- and p- ethylthioureidobenzoic acids and of 3-Ethyl-4-oxo-2-thion-1,2,3,4-tetrahydro-quinazoline," C. R. Acad. Bulg. Sci. 22(9):1031-1034 (1969).

<1408>
CHEMICAL NAME: Benzoic acid, m-(3-ethyl-2-thioureido)-, methyl ester
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, 200, and 400 mg/l.
APPLICATION METHODS: Plants grown on agar medium containing test compound
EXPERIMENTAL CONDITIONS: One series of tests at all concentrations, then 2 experiments with 3 replications using 200 mg/l.; diuron used as a standard; root length expressed as percent of untreated control determined
EFFECTS: Wheat root length 45.35%, radish root length 73.87%
COMMENTS: 3.99 and 8.53% root length of wheat and radish, respectively due to diuron; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G.N., L.K. Iliev, and R.T. Vassileva, "Chemical Structure and Herbicidal Activity of Certain Esters of the m- and p- ethylthioureidobenzoic acids and of 3-Ethyl-4-oxo-2-thion-1,2,3,4-tetrahydro-quinazoline," C. R. Acad. Bulg. Sci. 22(9):1031-1034 (1969).

<1409>
CHEMICAL NAME: Benzoic acid, m-(3-ethyl-2-thioureido)-, propyl ester
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, 200, and 400 mg/l.
APPLICATION METHODS: Plants grown on agar medium containing test compound
EXPERIMENTAL CONDITIONS: One series of tests at all concentrations, then 2 experiments with 3 replications using 200 mg/l.; diuron used as a standard; root length expressed as percent of untreated control determined
EFFECTS: Wheat root length 20.56%, radish root length 45.24%
COMMENTS: 3.99 and 8.53% root length of wheat and radish, respectively due to diuron; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G.N., L.K. Iliev, and R.T. Vassileva, "Chemical Structure and Herbicidal Activity of Certain Esters of the m- and p- ethylthioureidobenzoic acids and of 3-Ethyl-4-oxo-2-thion-1,2,3,4-tetrahydro-quinazoline," C. R. Acad. Bulg. Sci. 22(9):1031-1034 (1969).

<1410>
CHEMICAL NAME: Benzoic acid, m-(3-ethyl-2-thioureido)-, 1-methylethyl ester
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, 200, and 400 mg/l.
APPLICATION METHODS: Plants grown on agar medium containing test compound
EXPERIMENTAL CONDITIONS: One series of tests at all concentrations, then 2 experiments with 3 replications using 200 mg/l.; diuron used as a standard; root length expressed as percent of untreated control determined
EFFECTS: Wheat root length 18.09%, radish root length 32.08%
COMMENTS: 3.99 and 8.53% root length of wheat and radish, respectively due to diuron; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G.N., L.K. Iliev, and R.T. Vassileva, "Chemical Structure and Herbicidal Activity of Certain Esters of the m- and p- ethylthioureidobenzoic acids and of 3-Ethyl-4-oxo-2-thion-1,2,3,4-tetrahydro-quinazoline," C. R. Acad. Bulg. Sci. 22(9):1031-1034 (1969).

<1411>
CHEMICAL NAME: Benzoic acid, mercury(2+) salt
CHEMICAL COMMON NAME: Mercuric benzoic acid
PLANT: Oat, wild (AVENA FATUA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 3.5 X 10(-5) and 4.0 X 10(-4) M
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; oat and pea coleoptile assays
EFFECTS: Inhibited growth
COMMENTS: Arsenite, parachloromercuribenzoate, and phenylmercuric salts inhibited growth; inhibitions differed from those caused by iodoacetate in that they were not prevented or reversed by malate or other organic acids; difference ascribed to greater affinity of enzyme for these substances than for iodoacetate
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. II. The Action of Several Enzyme Inhibitors on the Growth of the AVENA Coleoptile and on PISUM Internodes," Am. J. Bot. 36:214-221 (1949).

<1412>
CHEMICAL NAME: Benzoic acid, methoxy-
CHEMICAL COMMON NAME: Anisic acid
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse phytotoxic effect
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1413>
CHEMICAL NAME: Benzoic acid, p-(3-ethyl-2-thioureido)-, ethyl ester
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, 200, and 400 mg/l.
APPLICATION METHODS: Plants grown on agar medium containing test compound
EXPERIMENTAL CONDITIONS: One series of tests at all concentrations, then 2 experiments with 3 replications using 200 mg/l.; diuron used as a standard; root length expressed as percent of untreated control determined
EFFECTS: Wheat root length 25.19%, radish root length 44.61%
COMMENTS: 3.99 and 8.53% root length of wheat and radish, respectively due to diuron; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G.N., L.K. Iliev, and R.T. Vassileva, "Chemical Structure and Herbicidal Activity of Certain Esters of the m- and p- ethylthioureidobenzoic acids and of 3-Ethyl-4-oxo-2-thion-1,2,3,4-tetrahydro-quinazoline," C. R. Acad. Bulg. Sci. 22(9):1031-1034 (1969).

<1414>
CHEMICAL NAME: Benzoic acid, p-(3-ethyl-2-thioureido)-, methyl ester
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, 200, and 400 mg/l.
APPLICATION METHODS: Plants grown on agar medium containing test compound
EXPERIMENTAL CONDITIONS: One series of tests at all concentrations, then 2 experiments with 3 replications using 200 mg/l.; diuron used as a standard; root length expressed as percent of untreated control determined
EFFECTS: Wheat root length 38.24%, radish root length 48.70%
COMMENTS: 3.99 and 8.53% root length of wheat and radish, respectively due to diuron; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G.N., L.K. Iliev, and R.T. Vassileva, "Chemical Structure and Herbicidal Activity of Certain Esters of the m- and p- ethylthioureidobenzoic acids and of 3-Ethyl-4-oxo-2-thion-1,2,3,4-tetrahydro-quinazoline," C. R. Acad. Bulg. Sci. 22(9):1031-1034 (1969).

<1415>
CHEMICAL NAME: Benzoic acid, p-(3-ethyl-2-thioureido)-, propyl ester
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, 200, and 400 mg/l.
APPLICATION METHODS: Plants grown on agar medium containing test compound
EXPERIMENTAL CONDITIONS: One series of tests at all concentrations, then 2 experiments with 3 replications using 200 mg/l.; diuron used as a standard; root length expressed as percent of untreated control determined
EFFECTS: Wheat root length 24.23%, radish root length 43.26%
COMMENTS: 3.99 and 8.53% root length of wheat and radish, respectively due to diuron; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G.N., L.K. Iliev, and R.T. Vassileva, "Chemical Structure and Herbicidal Activity of Certain Esters of the m- and p- ethylthioureidobenzoic acids and of 3-Ethyl-4-oxo-2-thion-1,2,3,4-tetrahydro-quinazoline," C. R. Acad. Bulg. Sci. 22(9):1031-1034 (1969).

<1416>
<1416>
CHEMICAL NAME: Benzoic acid, p-(3-ethyl-2-thioureido)-, 1-methylethyl ester
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, 200, and 400 mg/l.
APPLICATION METHODS: Plants grown on agar medium containing test compound
EXPERIMENTAL CONDITIONS: One series of tests at all concentrations, then 2 experiments with 3 replications using 200 mg/l.; diuron used as a standard; root length expressed as percent of untreated control determined
EFFECTS: Wheat root length 37.40%, radish root length 51.14%
COMMENTS: 3.99 and 8.53% root length of wheat and radish, respectively due to diuron; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G.N., L.K. Iliev, and R.T. Vassileva, "Chemical Structure and Herbicidal Activity of Certain Esters of the m- and p- ethylthioureidobenzoic acids and of 3-Ethyl-4-oxo-2-thion-1,2,3,4-tetrahydro-quinazoline," C. R. Acad. Bulg. Sci. 22(9):1031-1034 (1969).

<1417>
CHEMICAL NAME: Benzoic acid, p-(3-ethyl-2-thioureido)-, 1,1-dimethylethyl ester
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, 200, and 400 mg/l.
APPLICATION METHODS: Plants grown on agar medium containing test compound
EXPERIMENTAL CONDITIONS: One series of tests at all concentrations, then 2 experiments with 3 replications using 200 mg/l.; diuron used as a standard; root length expressed as percent of untreated control determined
EFFECTS: Wheat root length 45.44%, radish root length 50.17%
COMMENTS: 3.99 and 8.53% root length of wheat and radish, respectively due to diuron; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G.N., L.K. Iliev, and R.T. Vassileva, "Chemical Structure and Herbicidal Activity of Certain Esters of the m- and p- ethylthioureidobenzoic acids and of 3-Ethyl-4-oxo-2-thion-1,2,3,4-tetrahydro-quinazoline," C. R. Acad. Bulg. Sci. 22(9):1031-1034 (1969).

<1418>
CHEMICAL NAME: Benzoic acid, pentachloro-
CHEMICAL COMMON NAME: Pentachlorobenzoic acid
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect on shoot emergence
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1419>
CHEMICAL NAME: Benzoic acid, pentachloro-
CHEMICAL COMMON NAME: Pentachlorobenzoic acid
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1420>
CHEMICAL NAME: Benzoic acid, trichloro-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1421>
CHEMICAL NAME: Benzoic acid, 2-[(aminomethoxyphosphinothioyl)oxyl], 1-me..ylethyl ester
CHEMICAL COMMON NAME: Bay 93820
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 and 8.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight leaf damage with stand reduction at higher rate
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<1422>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: Naptalan
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Plants
EXPERIMENTAL DOSE: 4.0, 8.0, 12.0, and 16.0 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays
EXPERIMENTAL CONDITIONS: Field studies; time period--1967 to 1969; soils--Ramona sandy loam and Greenfield
EFFECTS: At 4.0 and 8.0 lb/A preemergence, generally effective control of broadleafs and moderate control of grass weeds with vigor reduction of asparagus; less effective in postemergence application
COMMENTS: Chemicals which killed or severely damaged asparagus include monuron, diuron, simazine, sinbar, sindone-B, treflan, tenoran, and CIPC; vegiben marginal; of herbicides tested in these trials for pre-emergence weed control in direct-seeded asparagus, balan, bensulide, and brominal offer most promising results
REFERENCE: Whiting, F.L., F.H. Takatori, and J.M. Lyons, "Weed Control in Asparagus," Calif. Agric. 25(1):4-5 (1971).

<1423>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: Naptalam
PLANT: Cucumber (CUCUMIS SATIVUS); Nutsedge, yellow (CYPERUS ESCULENTUS); Wiregrass (ELEUSINE INDICA); Crabgrass, large (DIGITARIA SANGUINALIS); Sicklepod (CASSIA OBTUSIFOLIA); Beggarweed, Florida (DESMODIUM TORTUOSUM); Pusley, Florida (RICHARDIA SCABRA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Sida, spiny (SIDA SPINOSA)
EXPERIMENTAL DOSE: 3.4 kg/ha
APPLICATION METHODS: Preemergence at 243 l./ha
EXPERIMENTAL CONDITIONS: Tifton loamy sand; cucumber rows (1.6 by 15.2 m) and watermelon rows (2.4 by 15.2 m); 123, 49, and 93 kg/ha of N, P, and K, respectively as fertilizer, handweeded check, cultivated check, and weedy check; 3 year experiment
EFFECTS: Good weed control first year, not effective second year; third year--good control in watermelon rows, only fair control in cucumbers; cucumber yield not as good as handweeded check, watermelon yield better than handweeded check first year but less the second and third years
COMMENTS: Variable results not explained--not due to soil moisture because of irrigation
REFERENCE: Glaze, N.C., "Weed Control in Cucumber and Watermelon," J. Amer. Soc. Hort. Sci. 100(3):207-209 (1975).

<1424>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: Naptalam
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--50% or greater inhibition in sorghum and oat but less than 50% in cucumber at 1 and 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 ppm, 50% or greater in sorghum but less than 50% in oat at 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<1425>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: Naptalam
PLANT: Grasses; Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Preemergence treatments 1 day after planting
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared June of following year; single row plots, 5 by 36 ft; cucumbers seeded 1 day after seedbed preparation; plots harvested 2 months after

<1425>
<1425> CONT.
planting
EFFECTS: Minor cucumber injury; good control of grasses, pigweed, and purslane
COMMENTS: Naptalam in combination with other herbicides also reported
REFERENCE: Noll, C.J., "Weed Control in Cucumbers in a Conventional Planting and in a Stale Seed Bed," Proc. Northeast. Weed Sci. Soc. 31:248-251 (1977).

<1426>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: Naptalan
PLANT: Squash, summer (CUCURBITA PEPO); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass (DIGITARIA sp.); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 3.0, 4.0, and 5.0 lb/A
APPLICATION METHODS: Preemergence application
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of all weeds; moderate damage to squash and reduced yield
COMMENTS: Outstanding preplant incorporated treatment was bensulide followed by chloramben, methyl ester applied preemergence; outstanding preemergence treatment for both weed control and yield was chloramben, methyl ester + asulam; crop injury induced by following preplant incorporated treatments: dibutalin, dinitramine (USB 3584), nitralin, and bensulide followed by naptalam applied preemergence
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "Some Promising Herbicides for Weed Control in Summer Squash," Proc. Northeast. Weed Sci. Soc. 28:224-228 (1974).

<1427>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: NPA
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.0 to 18.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: Effective weed control with no adverse effect on cotton at 9.0 lb/A for 60 day period
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<1428>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: Naptalam
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 2.25 and 4.50 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: Increased numbers of shoots; no adverse effects
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<1429>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: Naptalam
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha; 05% Biofilm added
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: Reduction in tuber numbers; no further adverse effects observed
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<1430>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: Naptalam
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l./ha
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl-bromide-fumigated soil (Maverly loam); evaluation time--37 and 41 days; tubers recovered and weighed or replanted in vermiculite for further study
EFFECTS: Increased dry weight and % tuber germination; no adverse effects observed
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<1431>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: NPA
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate weed control with no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<1432>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: Naptalam
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 5.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Poor sesame tolerance and poor barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<1433>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: NPA
PLANT: Pine, red (PINUS RESINOSA); Purslane, common (PORTULACA OLERACEA); Carpetweed (MOLLUGO VERTICILLATA); Weeds
EXPERIMENTAL DOSE: 1.8 and 3.6 lb/A
APPLICATION METHODS: Postemergence spray--one quart to each plot
EXPERIMENTAL CONDITIONS: Pine stock--spring 1960 germination (1-0 stock), spring 1959 germination (2-0 stock), and spring 1958 germination (2-1 stock); randomized complete block design, 4 by 2.7 ft plots; field studies; Plainfield sand soil
EFFECTS: 1-0 stock--weeds not significantly controlled, no significant damage to trees; 2-0 stock--no significant difference in dry weight of trees from control; 2-1 stock--weeds significantly controlled at 3.6 lb/A; no significant difference in dry weight of trees from control
COMMENTS: Weed infestation slight; weeds not tabulated separately
REFERENCE: Winget, C.H., T.T. Kozlowski, and J.E. Kuntz, "Effects of Herbicides on Red Pine Nursery Stock," Weeds 11(2):87-90 (1963).

<1434>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: Naptalam
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 3.4 kg/ha
APPLICATION METHODS: Preemergence spray applied at varied intervals after planting 0, 2, 4, and 8 days)
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Leeper silty clay loam; pot culture
EFFECTS: Moderate control of pigweed at 0 and 2 days of application with no adverse effect on cucumber at that application time
COMMENTS: For 3 weeks after planting, chloramben methyl ester gave complete weed control al all dates of application; DCPA and naptalam gave better weed control when applied at 0 and 2 days; diphenamid gave better control when applied at 0, 2, and 4 days following planting; cucumber survival reduced with application of all herbicides except naptalam at 4 days after planting
REFERENCE: Cole, A.W. and V.L. Etheridge, "Redroot Pigweed and Cucumber Response to Application Time of Herbicides," Advanc. Frontiers Plant Sci. 30:17-24 (1975).

<1435>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: Naptalam
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0 to 100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Promoted tuber sprouting
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<1436>
<1436>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: Alanap
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 6.0 and 12.0 lb/A
APPLICATION METHODS: Postplanting spray; 30 gal/A at 30 lb/sq in
EXPERIMENTAL CONDITIONS: Field study; soil--Stoy silt loam; application one week after planting in winter; time period--1961 and 1962
EFFECTS: Slight weed control
COMMENTS: Effective weed control, lasting until June of following year obtained with atrazine, CIPC, kloben, simazine, lorox, ametryne, and prometryne; atrazine, kloben and simazine gave nearly 100% control; atrazine caused plant injury with more dead plants in treated plots than in control planting; simazine and kloben safer materials
REFERENCE: Sherwood, L.V. and H.R. Kemmerer, "The Influence of Winter Applied Preemergence Herbicides on Weed Growth among Woody Ornamental Plants," Am. Soc. Hort. Sci. 85:657-662 (1964).

<1437>
CHEMICAL NAME: Benzoic acid, 2-[(1-naphthalenylamino)carbonyl]-
CHEMICAL COMMON NAME: NPA
PLANT: Soybean (GLYCINE MAX); Plants
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Preemergence spray; not less than 16 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period -- 1958 and 1959
EFFECTS: Moderate weed control with no adverse effect on soybean yield
COMMENTS: Mixture of CDAA and DNBP consistently gave better control of annual weeds in soybeans than either CIPC, NPA, CDAA or DNBP alone; green foxtail, barnyardgrass, lambsquarters, rough pigweed, purslane, ragweed, field pennycress and wild buckwheat controlled by this mixture; although some varieties of soybeans were more susceptible than others to a distortion of the plumular leaves caused by the CDAA, none permanently injured at rates used
REFERENCE: Hay, J.R., "Pre-Emergence Weed Control in Soybeans with Mixtures of Two Herbicides," Weeds 9(1):117-123 (1961).

<1438>
CHEMICAL NAME: Benzoic acid, 2-[[ethoxy[(1-methylethyl)amino]phosphinothioyl]oxy]-, 1-methylethyl ester
CHEMICAL COMMON NAME: Isophenphos
PLANT: Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 0.45, 0.77, and 2.2 kg/ha
APPLICATION METHODS: Broadcast at time of seeding; incorporated by "bow-wave" method; G Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and silt loam; time period--1972 and 1973; locations in England and Canada; trifluralin and propachlor combined treatment for effective weed control
EFFECTS: No adverse effect on cauliflower stand or yield
COMMENTS: Two combinations of herbicides, trifluralin incorporated pre-drilling plus propachlor pre-emergence, and nitrofen plus propachlor applied pre-emergence, gave good weed control; relative effectiveness depended on species composition of weed population; insecticides isophenphos, carbofuran, chlorfenvinphos and fensulfothion applied as bow-wave treatments; none whether in combination with herbicides or not, adversely affected crop stand or yield; yield reduced when either weeds or root-fly maggots not controlled
REFERENCE: Finlayson, D.G. and C.J. Campbell, "Herbicides and Insecticides: Their Compatibility and Effects on Weeds, Insects and Earthworms in the Minicauliflower Crop," Ann. Appl. Biol. 79(1):95-108 (1975).

<1439>
CHEMICAL NAME: Benzoic acid, 2-[[ethoxy[(1-methylethyl)amino]phosphinothioyl]oxy]-, 1-methylethyl ester
CHEMICAL COMMON NAME: BAY 92114
PLANT: Spangletop, bearded, (LEPTOCHLOA FASCICULARIS)
EXPERIMENTAL DOSE: 2.8 to 22.4 kg/ha
APPLICATION METHODS: Preplant incorporated (3 to 4 cm depth) by subsurface insecticide applicator; 10% G formulation
EXPERIMENTAL CONDITIONS: Field study; rutabagas harvested after 60 days at 30-day intervals thereafter; whole, sliced, and peelings used to evaluate insecticide persistence with first instar maggots of HYLEMA BRASSICAE
EFFECTS: Undefined phytotoxic effect on rutabagas at higher application rates
COMMENTS: At high rates, phytotoxicity recorded for all compounds except trichloronat and fonofos; phytotoxicity so severe with AC64475 that all plants destroyed with rates in excess of 11.2 kg/acre
REFERENCE: Read, D.C., "Toxicity of Carbamate and Organophosphorus Insecticide Residues Absorbed by Rutabagas Grown in Treated Soil," Can. Entmol. 106(7):1319-1325 (1974).

<1440>
CHEMICAL NAME: Benzoic acid, 2-amyloxy-3,5,6-trichloro-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1441>
CHEMICAL NAME: Benzoic acid, 2-bromo-3-nitro-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Severe damage to peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1442>
CHEMICAL NAME: Benzoic acid, 2-bromo-3-nitro-, ammonium salt
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 50 ml solution
APPLICATION METHODS: Aqueous spray applied in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: No significant effects
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<1443>
CHEMICAL NAME: Benzoic acid, 2-chloro-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Severe damage to peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1444>
CHEMICAL NAME: Benzoic acid, 2-chloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--abnormal growth, more pronounced at 30 lb/A; Petri dish test--104, 93, and 67% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1445>
CHEMICAL NAME: Benzoic acid, 2-chloro-
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.001 and 0.01 M
APPLICATION METHODS: Leaves immersed in 400 ml solutions containing test compound and 1% sucrose
EXPERIMENTAL CONDITIONS: Barley grains germinated for 6 days, leaves then subdivided into 10-g portions and immersed in solutions for 24 hr; CO(2) output and sucrose uptake estimated at 12-hr intervals; tissues dried at end of test and analyzed for carbohydrate content
EFFECTS: CO(2) putput decreased at 0.01 M but not at 0.001 M; sucrose uptake enhanced at 0.001 M; inhibited at 0.01 M; carbohydrate fractions decreased compared to control
COMMENTS: Possible that chlorobenzoic acids changed normal pathway of carbohydrate metabolism so that most carbohydrates transformed to non-sugar substances excreted into external media due to increased permeability of cells in presence of benzoic derivatives
REFERENCE: Naguib, M.I., "Effect of Benzoic Acid and its Derivatives on Plant Metabolism," Can. J. Bot. 41:939-946 (1963).

<1446>
<1446>
CHEMICAL NAME: Benzoic acid, 2-chloro-, hydrazide
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--wheat growth normal, cabbage growth abnormal; Petri dish test--100, 102, and 71% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1447>
CHEMICAL NAME: Benzoic acid, 2-hydroxy-
CHEMICAL COMMON NAME: Salicylic acid
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 1X10(-5) to 1X10(-3)M
APPLICATION METHODS: Seed germination; addition to soil
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--30 to 34 C; evaluation time--5 da; greenhouse study; pot culture
EFFECTS: Generally stimulatory to radicle and plumule except at 1X10(-3)M; inhibitory to seedling growth at all concentrations; no adverse effect on germination percentage
COMMENTS: Lower concentrations of vanillic, salicylic, p-hydroxybenzoic, p-coumaric, protocatechuic, and fumaric acids stimulatory to development of radicals and plumules of paddy seeds; increasing levels of acids decreased favourable effect, except that of fumaric acid; root and shoot growth of paddy seedlings retarded even at lower concentrations, and higher levels appreciably detrimental
REFERENCE: Gaur, A.C. and R.P. Pareek, "A Study on the Effect of Certain Phenolic Acids and Fumaric Acid in Soil on the Development of Paddy Seedlings and Nitrogen-Fixing Bacteria," Zbl. Bakt. Abt. II. 131:148-156 (1976).

<1448>
CHEMICAL NAME: Benzoic acid, 2-hydroxy-
CHEMICAL COMMON NAME: Salicylic acid
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<1449>
CHEMICAL NAME: Benzoic acid, 2-hydroxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 25, 50, 75, 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 39 and 31% growth at 25 and 50 ppm, respectively; no growth at higher concentrations
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<1450>
CHEMICAL NAME: Benzoic acid, 2-methoxy-3,5-dichloro-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1451>
CHEMICAL NAME: Benzoic acid, 2-methoxy-3,5-6-trichloro-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1452>
CHEMICAL NAME: Benzoic acid, 2-methoxy-3,6-dichloro-
CHEMICAL COMMON NAME: Velsicol B
PLANT: Bluegrass, annual (POA ANNUA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplant solution soak
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Puyallup fine sandy loam; pH--5.8; temperature--approx 60 F
EFFECTS: No effect on bluegrass or bentgrass
COMMENTS: Dacthal, betasan, dipropalin, trifluralin, and enide significantly controlled annual bluegrass for periods of 9 to 12 weeks; dacthal and betasan completely nonphytotoxic to mature turf
REFERENCE: Goss, R.L., "Preemergence Control of Annual Bluegrass (POA ANNUA L.)," J. Agron. 56(1):479-481 (1964).

<1453>
CHEMICAL NAME: Benzoic acid, 2-methoxy-3,6-dichloro-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1454>
CHEMICAL NAME: Benzoic acid, 2-phenylhydrazide
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Severe damage to peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1455>
CHEMICAL NAME: Benzoic acid, 2,3,5-trichloro-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1456>
<1456>
CHEMICAL NAME: Benzoic acid, 2,3,5-trichloro-
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 5 ml of oil solution
APPLICATION METHODS: Spray in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: No significant effects
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<1457>
CHEMICAL NAME: Benzoic acid, 2,3,5-trichloro-
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5, 1.0, and 5.0 ppm
APPLICATION METHODS: Pre and postemergence treatment
EXPERIMENTAL CONDITIONS: Seeds planted in plastic pots containing vermiculite; pots then immersed in 800 cc Hoagland's solution containing test compound til saturated, re-immersed periodically; after crookstage of development, plants immersed and remained for duration of experiment; average height and weight of untreated soybean plants determined 20 days after planting
EFFECTS: Severe formative primary leaf effects at 5 ppm, moderate formative effects at 1 ppm; no injury to first trifoliate leaves; 50% weight reduction at 10 ppm (ED50); moderate root stunting at 5 ppm, slight stunting at 0.5 and 1.0 ppm
COMMENTS: ED50 dosages determined from logarithmic plot
REFERENCE: Sutherland, M.L., S.R. McLane, R.D. Hart, and H.L. Raman, "The Response of Soybeans to Several Substituted Benzoic Acids," Hormolog 3(1):5-7 (1961).

<1458>
CHEMICAL NAME: Benzoic acid, 2,3,5-trichloro-6-methoxy-
CHEMICAL COMMON NAME: Tricamba
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3)M; moderate control at 10(-4)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1459>
CHEMICAL NAME: Benzoic acid, 2,3,5-trichloro-6-methoxy-
CHEMICAL COMMON NAME: Tricamba
PLANT: Nimblewill (MUHLENBERGIA SCHREBERI)
EXPERIMENTAL DOSE: 8, 12, and 16 lb/A
APPLICATION METHODS: Postemergence June treatments; EC formulation
EXPERIMENTAL CONDITIONS: Application to established nimblewill stands
EFFECTS: Control not satisfactory with 1 application; 16 lb/A rate less effective than 8 and 12 lb/A rates
COMMENTS: Trade name Banvel-T
REFERENCE: Herron, J.W., "Nimblewill in Kentucky Bluegrass Lawns Controlled by Herbicides," K. Farm Home Sci. 8(2):4-5, 8 (1962).

<1460>
CHEMICAL NAME: Benzoic acid, 2,3,5-triiodo-
CHEMICAL COMMON NAME: TIBA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 63 and 125 g/ha (157 and 313 ppm, respectively)
APPLICATION METHODS: Foliage spray, 400 l./ha
EXPERIMENTAL CONDITIONS: Tubers planted in pots, shoots emerged in 7-8 days; spraying after shoot establishment; pots placed in randomized blocks
EFFECTS: Shoot number increased; tuber number increased but insignificantly
COMMENTS: Not useful for nutgrass control; dimethylamine salt formulation
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<1461>
CHEMICAL NAME: Benzoic acid, 2,3,5-triiodo-
CHEMICAL COMMON NAME: TIBA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 63.0 and 125.0 g/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: Increased shoot numbers; no adverse effects
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<1462>
CHEMICAL NAME: Benzoic acid, 2,3,5-triiodo-
CHEMICAL COMMON NAME: TIBA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 125 g/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha; 05% Biofilm added
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: No adverse effects observed
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<1463>
CHEMICAL NAME: Benzoic acid, 2,3,5-triiodo-
CHEMICAL COMMON NAME: TIBA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 100 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Promoted tuber sprouting
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<1464>
CHEMICAL NAME: Benzoic acid, 2,3,5-triiodo-
CHEMICAL COMMON NAME: TIBA
PLANT: Fennel (FOENICULUM VULGARE)
EXPERIMENTAL DOSE: 5000 ppm
APPLICATION METHODS: Injections of 1 cc
EXPERIMENTAL CONDITIONS: Formative effects observed
EFFECTS: Leaf sheath becomes cylindrical and closed; condensation of leaf midrib; axillary bud ruptures completely closed leaf sheath; compound umbel converted into simple umbel due to fusion of peduncles of umbellets; fusion of flowers in groups of 2 to 4
COMMENTS: TIBA--anti-auxin
REFERENCE: Chaturvedi, S.N., "Formative Effects of 2,3,5-Tri-iodobenzoic Acid on FOENICULUM VULGARE Mill," Agra Univ. J. Res. Sci. 4(2):589-594 (1955).

<1465>
CHEMICAL NAME: Benzoic acid, 2,3,5-triodo-, ammonium salt
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 50 ml solution
APPLICATION METHODS: Aqueous spray applied in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: No significant effects
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<1466>
CHEMICAL NAME: Benzoic acid, 2,3,5,6-tetrachloro-
CHEMICAL COMMON NAME: 2,3,5,6-TBA
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, and 10(-6)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete on near-complete control of shoot emergence at 10(-3) and 10(-4)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1467>
CHEMICAL NAME: Benzoic acid, 2,3,5,6-tetrachloro-
CHEMICAL COMMON NAME: 2,3,5,6-TBA
PLANT: Bahiagrass (PASPALUM NOTATUM); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1.5 to 6.0 lb/A; propylene glycol butyl ether ester
APPLICATION METHODS: Foliar spray; 20 to 36.6 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; soils--Lakeland fine and coarse sand and Kanapaha fine sand; results in greenhouse and field similar; time period--1956 and 1957
EFFECTS: No or slight damage of mature bahiagrass with effective weed control thus allowing turf establishment
COMMENTS: Oil soluble 2,3,6-TBA killed all bahiagrass seedlings under greenhouse conditions; same treatments,

<1467>
<1467> CONT.
applied to seedlings in field, killed a high percentage but not all plants; carrier consisting partially or entirely of diesel oil for other herbicidl treatments caused more severe damage to seedlings than water carrier for comparable treatments
REFERENCE: Black, C.C. and E.G. Rodgers, "Response of Pensacola Bahiagrass to Herbicides," Weeds 8(1):72-77 (1960).

<1468>
CHEMICAL NAME: Benzoic acid, 2,3,5,6-tetrachloro-4-[(methoxymethylamino)carbonyl]-, methyl ester
CHEMICAL COMMON NAME: OCS-21693
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Preemergence September application
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Excessively injurious to legumes; weeds not controlled
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<1469>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Bursage, wollyleaf (FRANSERIA TOMENTOSA)
EXPERIMENTAL DOSE: 2.2 and 22.0 kg/ha
APPLICATION METHODS: Soil sterilant application with and without incorporation; postemergence sprays at varied stages of plant development; liquid sprays at 188 l/ha; pellets or granules broadcast by hand; dimethyl amine salt formulation
EXPERIMENTAL CONDITIONS: Field study; non-crop areas; time period--1962 to 1968; evaluation time--up to 3 yr; soil--clay loam
EFFECTS: Moderate control for up to 3 years as soil sterilant (22.0 kg/ha), but only slight control in postemergence application at 2.2 kg/ha
COMMENTS: Fenac controlled woollyleaf bursage for 3 years in noncropped areas; effective control of woollyleaf bursage obtained when treated at bud stage or earlier with ester formulation of 2,4-D
REFERENCE: Smith, D.T., A.F. Wiese, and A.W. Cooley, "Woollyleaf Bursage Response to Selected Herbicides," Weed Sci. 20(6):554-556 (1972).

<1470>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot behavior at 10(-3) and 10(-4)M; moderate control at 10(-5)
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1471>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.1 to 100 ppm w
APPLICATION METHODS: Addition to Hoagland's nutrient solution and to soils
EXPERIMENTAL CONDITIONS: Laboratory study; culture in nutrient solution and in soils
EFFECTS: Inhibition of germination and growth at less than 10 ppm
COMMENTS: 2,3,6-TBA less toxic in oats than either dicamba or amiben, latter two herbicides similar in phytotoxicity; in soil, dicamba most phytotoxic in each of four soils used, while 2,3,6-TBA and amiben similar in toxicity in all soils except organic soil, in which amiben was less phytotoxic than 2,3,6-TBA
REFERENCE: Donaldson, T.W. and C.L. Foy, "The Phytotoxicity and Persistence in Soils of Benzoic Acid Herbicides," Weeds 13(3):195-202 (1965).

<1472>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Bromegrass, downy (BROMUS TECTORUM); Wheatgrass, intermediate (AGROPYRON INTERMEDIUM); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 2.0 to 8.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 or 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; 2 locations in WA; time period--1958 to 1960
EFFECTS: No or slight control of downy brome with very slight damage of wheatgrass and bluegrass
COMMENTS: IPC and CIPC most effective herbicides for controlling downy brome without serious injury to perennial grasses grown for seed production; endothal gave good downy brome control
REFERENCE: Canode, C.L., W.C. Robocker, and T.J. Muzik, "Grass Seed Production as Influenced by Chemical Control of Downy Brome," Weeds 10(3):216-219 (1962).

<1473>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.1 to 5.0 lb/A; dimethylamine salts
APPLICATION METHODS: Postemergence spray; 20, 40, and 60 gal/A at 20, 40, and 60 psi
EXPERIMENTAL CONDITIONS: Field study; volatility and drift studied
EFFECTS: Reduced soybean yield at all rates and reduced cotton yield at 1.0 lb/A
COMMENTS: PBA, 2,3,6-TBA, and fenac sprays applied safely for eradication of perennial weeds in and near cotton; use of these herbicides near soybeans hazardous because very small quantities caused leaf deformities and some loss in seed yield
REFERENCE: Wiese, A.F. and A.G. Martin, "Toxicity of Benxoic Acid Herbicides to Cotton and Soybeans," Weeds 11(1):7-10 (1963).

<1474>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2, 3, 6-TBA, sodium salt
PLANT: Witchweed (STRIGA ASIATICA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3, 4, 6, 8, and 12 lb/A
APPLICATION METHODS: Preplanting incorporated treatments
EXPERIMENTAL CONDITIONS: 1958 experiment--12 by 40 ft plots, corn planted 7 days after treatment, randomized block design with 4 replications; 1959 experiment--randomized block design with 3 replications, corn planted 5, 10, and 20 days after treatment; soil--Lakeland sand
EFFECTS: 1958--effective witchweed control at 3, 6, and 12 lb/A; 1959--effective witchweed control at 4, 8, and 12 lb/A, little or no effect on corn stands
COMMENTS: Degree of witchweed control based on corn yield
REFERENCE: Robinson, E.L., Soil-incorporated Pre-planting Herbicides for Witchweed Control," Weeds 9(3):411-415 (1961).

<1475>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: Benzac
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 20 gal/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control with heavy regrowth (3 mo)
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<1476>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Barley (HORDEUM VULGARE); Cocklebur, Pennsylvanian (XANTHIUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 1.0 to 3.0 ppm
APPLICATION METHODS: Addition to culture solution
EXPERIMENTAL CONDITIONS: Environmental chamber; hydroponic culture; whole roots or one-third of roots immersed in test solutions; pH--7.0; temperature--16 to 23 C; RH--50 to 70%; photoperiod--12 hr
EFFECTS: Death of pea and retarded growth of barley
COMMENTS: Propham, chlorpropham, atratone and 2,3,6-TBA killed plants whether application was to one-third or all roots; roots in direct contact with propham, chlorpropham and 2,3,6-TBA deformed or killed, while roots in uncontaminated solution remained healthy; atratone and chlorpropham transmitted to roots not in toxic solution
REFERENCE: Lyndsay, R.V. and G.S. Hartley, "Studies of the Response of Plants to Root-Applied Herbicides," Weed Res. 3(3):195-204 (1963).

<1477>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 1.0 to 40.0 lb/A; dimethylamine
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Killed at 40.0 lb/A only
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most common phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<1478>
<1478>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Rabbitbrush, green (CHRYSOTHAMNUS VISICIDIFLORUS); Rabbitbrush, grey (CHRYSOTHAMNUS NAUSEOSUS)
EXPERIMENTAL DOSE: 3.0 lb/A; butoxyethanol
APPLICATION METHODS: Foliar spray; 30 psi; 5.0 to 10.9 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1950 to 1955
EFFECTS: No control of either species
COMMENTS: Green and grey rabbitbrush more susceptible to 2,4-D esters than to any of other herbicides used; with 2,4-D esters, an acid equivalent rate of 3 lb/A gave good rabbitbrush control
REFERENCE: Hyder, D.N., F.A. Sneva, D.O. Chilcote, and W.R. Furtick, "Chemical Control of Rabbitbrush with Emphasis Upon Simultaneous Control of Big Sagebrush," Weeds 6(3):289-297 (1958).

<1479>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.4 to 819.2 ppmw (of soil)
APPLICATION METHODS: Added to soil in water solutions
EXPERIMENTAL CONDITIONS: Greenhouse study; soils--Yolo fine sandy loam, Yolo clay loam, and Egbert loam; persistence studied in container culture in which oats indicator plant was planted, harvested, replanted, etc on 4 to 8 wk cycle
EFFECTS: At 6.4 ppmw and higher concentrations, herbicide persisted for 2 or 3 crop cycles
COMMENTS: Initial toxicity in order of decreasing toxicity was: fenuron and monuron, CIPC, dalapon and TCA, GMIPC, and TBA; comparative inactivation in order of most rapid to slowest inactivation, was; TCA, dalapon, CIPC, CMIPC, TBA, fenuron, and monuron
REFERENCE: Crafts, A.S. and H. Drever, "Experiments with Herbicides in Soils," Weeds 8(1):12-18 (1960).

<1480>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Plants
EXPERIMENTAL DOSE: 6.0 to 15.0 lb/A; G
APPLICATION METHODS: Hand-broadcasting
EXPERIMENTAL CONDITIONS: Field study; time period--1957 to 1959; 3 range sites--sandy upland, prairie upland, and bottomland
EFFECTS: Herbage yield reduced in prairie upland application but unaffected at other sites
COMMENTS: Neither herbicide affected herbage production on sandy upland site; heavy rates of 2,3,6-TBA decreased production on both prairie upland and bottomland sites characterized by clay or clay-loam soils; greater reduction resulted on prairie upland site having cool-season grass
REFERENCE: Hughes, E.E. and R.A. Darrow, "Herbage Production Responses to Pelleted Fenuron and Granular 2,3,6-TBA," J. Range Manag. 17:197-199 (1964).

<1481>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Salmonberry (RUBUS SPECTABILIS)
EXPERIMENTAL DOSE: 2.5 and 5.0% solutions
APPLICATION METHODS: Applied as spray to basal 6 in. of every stem; one gal of solution/30 plants (approx.)
EXPERIMENTAL CONDITIONS: Field study; seasonal applications evaluated
EFFECTS: Defoliation and root kill at both rates; January application less effective than others
COMMENTS: January applications gave generally poorer results than those in March and April; March and April applications produced 100% defoliation and kill for all treatments, with only erratic exceptions; diesel oil alone gave effective control only in April
REFERENCE: Madison, R.W. and V.H. Freed, "Basal Treatments for Control of Salmonberry," Weeds 10(3):247-248 (1962).

<1482>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Thistle, Russian (SALSOLA IBERICA); Corn (ZEA MAYS); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 1.0 to 6.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Eckman loam; crop rotation and herbicides evaluated for thistle control; time period--1958 to 1962
EFFECTS: Effective thistle control at 4.0 and 6.0 lb rates with no adverse effect on oats but moderate damage of corn
COMMENTS: Stands of Russian knapweed reduced over 80 per cent by several combinations of crops, cultivation and herbicides; two of best crop rotations in a 4-year trial were: (1) a short season of intensive cultivation and a mid-August seeding of bromegrass sprayed with 2,4-D; (2) bromegrass seeded with oat companion crop sprayed with 2,4-D ester; best use of non-selective herbicides in two 2-year trials was spring application of 2,3,6-TBA or PBA, plowing 10 days later, and a corn crop sprayed with 2,4-D ester; reinfestation from established plants not prevented, but annual application of 2,4-D prevented reinfestation from seedlings
REFERENCE: Derscheid, L.A., W.H. Wallace, and L.J. Wrage, "Cropping, Cultivation and Herbicides to Eliminate Russian Knapweed and Prevent Reinfestation," Weeds 11(3):237-243 (1963).

<1483>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Bahiagrass (PASPALUM NOTATUM); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1.5 to 9.0 lb/A; diesel oil solvent
APPLICATION METHODS: Foliar spray; 20 to 36.6 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; soils--Lakeland fine and coarse sand and Kanapaha fine sand; results in greenhouse and field similar; time period--1956 and 1957
EFFECTS: Killed young bahiagrass at 1.5 to 9.0 lb rates; reduced or eliminated competing weed species with less damage of mature bahiagrass thus allowing turf establishment
COMMENTS: Oil soluble 2,3,6-TBA killed all bahiagrass seedlings under greenhouse conditions; same treatments, applied to seedlings in field, killed a high percentage but not all plants; carrier consisting partially or entirely of diesel oil for other herbicidl treatments caused more severe damage to seedlings than water carrier for comparable treatments
REFERENCE: Black, C.C. and E.G. Rodgers, "Response of Pensacola Bahiagrass to Herbicides," Weeds 8(1):72-77 (1960).

<1484>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.25, 0.5, and 1.0 ppm
APPLICATION METHODS: Pre and postemergence treatment
EXPERIMENTAL CONDITIONS: Seeds planted in plastic pots containing vermiculite; pots then immersed in 800 cc Hoagland's solution containing test compound til saturated, re-immersed periodically; after crookstage of development, plants immersed and remained for duration of experiment; average height and weight of untreated soybean plants determined 20 days after planting
EFFECTS: Rudimentary primary and first trifoliate leaf development at all rates; 50% height reduction at 0.25 ppm (ED50) and 50% weight reduction at 0.15 ppm (ED50); rudimentary root development at 1.0 ppm, severe root stunting at 0.5 ppm
COMMENTS: ED50 dosages determined from logarithmic plot
REFERENCE: Sutherland, M.L., S.R. McLane, R.D. Hart, and H.L. Raman, "The Response of Soybeans to Several Substituted Benzoic Acids," Hormolog 3(1):5-7 (1961).

<1485>
CHEMICAL NAME: Benzoic acid, 2,3,6-trichloro-
CHEMICAL COMMON NAME: 2,3,6-TBA
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6)M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 4.12 to 2.86 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<1486>
CHEMICAL NAME: Benzoic acid, 2,4-dichloro-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect on shoot emergence
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1487>
CHEMICAL NAME: Benzoic acid, 2,4,5-trichloro-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect on shoot emergence
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1488>
<1488>
CHEMICAL NAME: Benzoic acid, 2,4,5,6-tetrachloro-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect on shoot emergence
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1489>
CHEMICAL NAME: Benzoic acid, 2,5-dichloro-
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5, 1.0, and 5.0 ppm
APPLICATION METHODS: Pre and postemergence treatment
EXPERIMENTAL CONDITIONS: Seeds planted in plastic pots containing vermiculite; pots then immersed in 800 cc Hoagland's solution containing test compound til saturated, re-immersed periodically; after crookstage of development, plants immersed and remained for duration of experiment; average height and weight of untreated soybean plants determined 20 days after planting
EFFECTS: First trifoliate leaves normal but at 5 ppm not fully expanded; 50% weight reduction at 4.3 ppm (ED50); moderate stunting of roots at 5 ppm, slight stunting at 0.5 and 1.0 ppm
COMMENTS: ED50 dosages determined from logarithmic plot
REFERENCE: Sutherland, M.L., S.R. McLane, R.D. Hart, and H.L. Raman, "The Response of Soybeans to Several Substituted Benzoic Acids," Hormolog 3(1):5-7 (1961).

<1490>
CHEMICAL NAME: Benzoic acid, 2,5-dichloro-3-nitro-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect on shoot emergence
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1491>
CHEMICAL NAME: Benzoic acid, 2,5-dichloro-3-nitro-
CHEMICAL COMMON NAME: Dinoben
PLANT: Celery (APIUM GRAVEOLENS); Carrot (DAUCUS CAROTA); Tomato (LYCOPERSICON ESCULENTUM); Pepper (CAPSICUM FRUTESCENS); Spinach (SPINACIA OLERACEA); Endive; Romaine; Lettuce (LACTUCA SATIVA); Onion (ALLIUM CEPA); Radish (RAPHANUS SATIVUS); Cabbage, Chinese (BRASSICA PEKINENSIS); Cabbage (BRASSICA OLERACEA); Cucumber (CUCUMIS SATIVUS); Beet, sugar (BETA VULGARIS); Kenaf; Cotton (GOSSYPIUM HIRSUTUM); Pea, English; Pea, Southern (LATHYRUS sp.); Bean, snap (PHASEOLUS VULGARIS); Soybean (GLYCINE MAX); Wheat (TRITICUM sp.); Rice (LEERSIA ORYZOIDES); Oat (AVENA SATIVA); Hegari; Ryegrass (LOLIUM sp.); Stickerweed (AMARANTHUS SPINOSUS); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 4, 8, and 12 lb/A
APPLICATION METHODS: Treatments prior to crop and weed emergence; application as spray in 40 gpa of aqueous solution at 30 psi
EXPERIMENTAL CONDITIONS: Randomized block design with 4 replications; crops planted in east-west rows, 6 X 75 ft herbicide strips established north-south; hand-weeded and unweeded controls; evaluations made 30 days after emergence
EFFECTS: 4 lb/A--celery, carrot, lettuce, snapbean, soybean, pepper, and wheat tolerance 75% or greater; 8 lb/A--celery at 97% was only crop more tolerant than 75%; 12 lb/A--celery and carrot at 75% were only crops which showed at least 75% tolerance; good stickerweed control at all rates but 12 lb/A best (97%); crabgrass effectively controlled at 8 and 12 lb/A, 91 and 94% respectively
COMMENTS: Tolerance based on untreated control; celery and carrots most tolerant crops
REFERENCE: Orsenigo, J.R., "Pre-emergence Performance of Several Herbicides and Vegetable and Field Crop Response on Organic Soil," Proc. South. Weed Conf. 12:59-66 (1958).

<1492>
CHEMICAL NAME: Benzoic acid, 2,5-dichloro-3-nitro-
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1, 5, 10, 15, and 20 ppm
APPLICATION METHODS: Pre and postemergence treatment
EXPERIMENTAL CONDITIONS: Seeds planted in plastic pots containing vermiculite; pots then immersed in 800 cc Hoagland's solution containing test compound til saturated, re-immersed periodically; after crookstage of development, plants immersed and remained for duration of experiment; average height and weight of untreated soybean plants determined 20 days after planting
EFFECTS: No primary leaf malformation; mild trifoliate leaf malformation at 10 ppm, more severe at 15 and 20 ppm; height and weight reduced by 50% at 20 ppm (ED50); slight root stunting at 10, 15, and 20 ppm
COMMENTS: ED50 dosages determined from logarithmic plot
REFERENCE: Sutherland, M.L., S.R. McLane, R.D. Hart, and H.L. Raman, "The Response of Soybeans to Several Substituted Benzoic Acids," Hormolog 3(1):5-7 (1961).

<1493>
CHEMICAL NAME: Benzoic acid, 2,5-dichloro-6-nitro-
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.25, 0.5, and 1.0 ppm
APPLICATION METHODS: Pre and postemergence treatment
EXPERIMENTAL CONDITIONS: Seeds planted in plastic pots containing vermiculite; pots then immersed in 800 cc Hoagland's solution containing test compound til saturated, re-immersed periodically; after crookstage of development, plants immersed and remained for duration of experiment; average height and weight of untreated soybean plants determined 20 days after planting
EFFECTS: Severe formative effects of primary leaves at 0.5 and 1.0 ppm; rudimentary first trifoliate leaf development at 0.5 and 1.0 ppm; 50% height reduction at 1.7 ppm (ED50) and 50% weight reduction at 1.1 ppm (ED50); slight root stunting at 0.5 and 1.0 ppm
COMMENTS: ED50 dosages determined from logarithmic plot
REFERENCE: Sutherland, M.L., S.R. McLane, R.D. Hart, and H.L. Raman, "The Response of Soybeans to Several Substituted Benzoic Acids," Hormolog 3(1):5-7 (1961).

<1494>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro
CHEMICAL COMMON NAME: Chloramben
PLANT: Soybean (GLYCINE MAX);Grasses;Broadleaf weeds
EXPERIMENTAL DOSE: 3.36 kg/ha
APPLICATION METHODS: Preplant spray with soil incorporation (5 cm depth); preemergence spray; 188 l./ha; varied combinations of herbicides and types of applications studied
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy clay loam and Cecil sandy loam; 188 l./ha
EFFECTS: Effective control of grass weeds but moderate control of broadleaves with very slight damage to soybeans in preemergence spray
COMMENTS: Sequential treatment of vernolate with linuron, prometryne, or chloramben ester controlled weeds more effectively in soybeans than did trifluralin or nitralin applied with the same preemergence treatments; soybean injury was not severe enough to reduce seed yields in any year.
REFERENCE: Johnson, B.J., "Effect of Herbicide Combinations on Weeds and Soybeans," Weed Sci. 19(6): 740-742 (1971).

<1495>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro
CHEMICAL COMMON NAME: Chloramben
PLANT: Purslane, common (PORTULACA OLERACEA); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 4 and 8 lb/A
APPLICATION METHODS: Formulation -- 2 lb/gal liquid, sprays applied in 50 gallon solution per acre; postplanting application
EXPERIMENTAL CONDITIONS: Chrysanthemums commercially grown two seasons on gravelly sandy loam; roots dipped in activated carbon to reduce herbicide injury to chrysanthemums
EFFECTS: First growing season -- 4 lb/A gave one month weed control, repeated application gave weed control for remainder of season, 8 lb/A did not extend weed control
COMMENTS: During first growing season, flooding affected herbicide incorporation and chrysanthemum growth; no treatment controlled weeds all season without injury to chrysanthemums; use of multiple applications not thoroughly investigated; suggestions given for sequential herbicide use
REFERENCE: Ahrens, J.F., "Weed Control in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 28:386-394(1974).

<1496>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro
CHEMICAL COMMON NAME: Chloramben
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Mustard, wild (BRASSICA KABER); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 2% EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate overall weed control including barnyard grass but effective control of mustard and pigweed with no adverse effect on LIROPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<1497>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 3.0 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: In preemergence application, chloramben (ammonium salt), killed pigweed but not galinsoga and caused unspecified damage to crop beans
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave

<1497>
<1497> CONT.
excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.E. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<1498>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Purslane, common (PORTULACA OLERACEA); Plants
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preemergence incorporated (by irrigation); preplant incorporated (disking); pretransplant
EXPERIMENTAL CONDITIONS: Field study; irrigation (sprinkler and furrow); time period--1964, 1965, and 1968
EFFECTS: At both rates, moderate control of purslane and effective control of other weeds
REFERENCE: Whiting, F.L., L.P. Lippert, and J.M. Lyons, "Chemical Weed Control in Peppers," Calif. Agric. 24(7):8-9 (1970).

<1499>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Plants
EXPERIMENTAL DOSE: 2.0 to 8.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; time period--1967 to 1969; soils--Ramona sandy loam and Greenfield
EFFECTS: Effective weed control at 4.0 to 8.0 lb/A with slight vigor reduction of asparagus
COMMENTS: Chemicals which killed or severely damaged asparagus include monuron, diuron, simazine, sinbar, sindone-b, treflan, tenoran, and CIPC; vegiben marginal; of herbicides tested in these trials for pre-emergence weed control in direct-seeded asparagus, balan, bensulide, and brominal offer most promising results
REFERENCE: Whiting, F.L., F.H. Takatori, and J.M. Lyons, "Weed Control in Asparagus," Calif Agric. 25(1):4-5 (1971).

<1500>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 3.36 kg/ha; acid and ester
APPLICATION METHODS: Preemergence spray; 188 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy loam or Cecil clay loam; time period--1969 to 1971
EFFECTS: Effective control of grasses and moderate control of broadleaf weeds with very slight damage to sunflower
COMMENTS: Alachlor applied in combination with either chlorpropham or prometryne satisfactorily controlled grasses and broadleaf weeds in sunflowers planted in April and June from 1969 through 1971; higher percentage of broadleaf weeds controlled with herbicides applied preemergence to sunflowers planted in April than when applied to sunflowers planted in June.
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Preplant or Preemergence on Weeds and Sunflowers," Crop Sci. 12(1):650-653 (1972).

<1501>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Grasses; Broadleaf weeds; Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A; 2% and 6% EC
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 13 locations in Iowa
EFFECTS: Effective weed control with no adverse effect on soybean
COMMENTS: Dinitroaniline chemicals applied at proper rates for organic matter levels present provided good to excellent grass control; rate probably more critical for organic matter on BAS-3901, CG-10832 and dinitramine than for trifluralin; organic matter exceedingly critical for nitraline; vernolate provided good grass control and at most locations, better broadleaf control than dinitroaniline chemicals; preplant incorporated plus overlay treatment can increase broadleaf and overall weed control and usually result in less phototoxicity to the crop
REFERENCE: Jennings, V.M., D.W. Staniforth, and W.G. Lovely, "Soybean Herbicide Evaluations Across Iowa in 1973," Proc. N. Cent. Weed Contr. Conf. 28:42-45 (1973).

<1502>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1503>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Ametryne
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect at any application rates
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1504>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 12 locations in IA
EFFECTS: Moderate weed control
COMMENTS: Preplant-incorporated treatments more consistent in grass and broadleaf weed control than preemergence treatments; preplant-incorporated herbicide butylate plus R-25788 and EPTC plus R-25788 and preplant or preemergence chemical such as alachlor and CGA-24705 provided good to excellent grass control but needed assistance of broadleaf controlling herbicides such as atrazine, cyanazine, and procyazine
REFERENCE: Studt, D.M. and V.M. Jennings, "Corn Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:146-150 (1975).

<1505>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Soybean (GLYCINE MAX); Sesbania, hemp (SESBANIA EXALTATA); Mexicanweed (CAPERONIA CASTANAEFOLIA); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 2.24 and 3.36 kg/ha
APPLICATION METHODS: Preemergence spray; 2.0 m swath
EXPERIMENTAL CONDITIONS: Field study; soil--heavy clay; evaluation time--2 or 6 wk
EFFECTS: Slight damage to soybeans with no damage to weeds
COMMENTS: Linuron or metribuzin resulted in good control of hemp sesbania and mexicanweed; no preemergence herbicide tested gave good morningglory control, but metribuzin and RP-17623 resulted in fair control
REFERENCE: Eastin, E.F., "Control of Problem Weeds in Texas Soybeans," Proc. South. Weed Sci. Soc. 26:67-73 (1973).

<1506>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.5 and 2.5 lb/A; 2% RC
APPLICATION METHODS: Preemergence spray; combined herbicides and types of application
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7
EFFECTS: Effective control of pigweed and slight to moderate control of other weeds with no damage to cucumber and slight damage to squash
COMMENTS: Control of crabgrass, pigweed, ragweed and lambsquarters in seeded cucumbers and squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence and preemergence applications of chloramben methyl ester alone; in cucumbers only, bensulide preplant incorporatd + chloramben methyl ester preemergence, bensulide preplant incorporated + dinoseb preemergence over activated charcoal, and nitralin preemergence gave excellent full-season weed control
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<1507>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 1.0, 2.5, and 5.0X10(-3)M (3 ml/plant)
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Death of all root sections at 2.5 and 5.0 X 10(-3)M as well as three most proximal root sections
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

<1508>
<1508>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--1 ppm showed 50% or greater inhibition in sorghum but less than 50% in oat and cucumber, 10 ppm caused 50% or greater in all 3 plants; shoot--1 ppm showed less than 50% inhibition in sorghum and oat, 10 ppm showed 50% or greater in both
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<1509>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Grasses; Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Preemergence treatments 1 day after planting
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared June of following year; single row plots, 5 by 36 ft; cucumbers seeded 1 day after seedbed preparation; plots harvested 2 months after planting
EFFECTS: Very minor cucumber injury; good control of grasses and purslane; poor pigweed control
COMMENTS: Chloramben in combination with other herbicides also reported
REFERENCE: Noll, C.J., "Weed Control in Cucumbers in a Conventional Planting and in a Stale Seed Bed," Proc. Northeast. Weed Sci. Soc. 31:249-251 (1977).

<1510>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Broadleaf weeds; Grasses; Bean, pinto (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 2.0 lb/A; ester
APPLICATION METHODS: Preplant spray (incorporated, 3.5 in. depth) and preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--Tripp sandy loam and Bridgeport loam; two locations in Nebraska
EFFECTS: Moderate control of weeds with slight initial injury to field beans but little if any adverse effect on bean yield
COMMENTS: Weed control and field bean yields higher when EPTC, trifluralin, and alachlor incorporated than when applied 4 days after planting and rotary hoed; best results with alachlor resulted when applied preemergence; best control of black nightshade was with EPTC and alachlor or these herbicides in combinations with other herbicides
REFERENCE: Fenster, C.R. and G.A. Wicks, "Weed Control in Field Beans in Nebraska," Proc. N. Centr. Weed Contr. Conf. 26:50-52 (1971).

<1511>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Amiben
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Lamb's-quarters (CHENOPODIUM ALBUM); Carpetweed (MOLLUGO VERTICILLATA); Foxtail (SETARIA sp.); Nutsedge, yellow (CYPERUS ESCULENTUS); Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.8 lb/A
APPLICATION METHODS: Preemergence (late) spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective overall weed control with no adverse effect on soybean
COMMENTS: Controlled all broadleaf and most grassy weeds present; four pounds did not cause injury to soybeans
REFERENCE: Szabo, J.G., "Results of M&B 14255 Application on Soybeans in Indiana, 1971," Proc. W. Cent. Weed Confr. Conf. 26:48-49 (1971).

<1512>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Amiben
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.1 to 100 ppm w
APPLICATION METHODS: Addition to Hoagland's nutrient solution and to soils
EXPERIMENTAL CONDITIONS: Laboratory study; culture in nutrient solution and in soils
EFFECTS: Inhibition of germination and growth at less than 10 ppm
COMMENTS: 2,3,6-TBA less toxic in oats than either dicamba or amiben, latter two herbicides similar in phytotoxicity; in soil, dicamba most phytotoxic in each of four soils used, while 2,3,6-TBA and amiben similar in toxicity in all soils except organic soil, in which amiben was less phytotoxic than 2,3,6-TBA
REFERENCE: Donaldson, T.W. and C.L. Foy, "The Phytotoxicity and Persistence in Soils of Benzoic Acid Herbicides," Weeds 13(3):195-202 (1965).

<1513>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Squash, summer (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 2.5 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence; postemergence application of BAS-3512 H only
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7; time period--1972
EFFECTS: Moderate to effective control of all weeds with slight injury to squash and none to cucumber
COMMENTS: Effective control of large crabgrass, redroot pigweed, common ragweed and lambsquarters in seeded cucumbers and summer squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence and preemergence applications of chloramben methyl ester alone
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<1514>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Spinach (SPINACIA OLERACEA); Grasses; Purslane, common (PORTULACA OLERACEA); Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 3.0 lb/A; 2 and 3% EC
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence applications
EXPERIMENTAL CONDITIONS: Field study; soil--Norfolk loamy sand; irrigation
EFFECTS: Effective control of weeds with 6% EC formulation with slight injury to lima bean
COMMENTS: Acceptable weed control and yields obtained with trifluralin and profluralin; dinitramine significantly reduced stand, vigor, and yields of baby lima beans; alachlor provided acceptable weed control without yield reduction; combined herbicide applications just as effective
REFERENCE: Beste, C.E., "New Herbicides for Lima Beans," Proc. Northeast. Weed Sci. Soc. 29:194-196 (1975).

<1515>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Cucumber (CUCUMIS SATIVUS); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 1.7 and 3.4 kg/ha; methyl ester
APPLICATION METHODS: Preplant spray; 170 l./ha; soil incorporation (5 cm depth); preemergence sprays for nitralin and chloramben
EXPERIMENTAL CONDITIONS: Field study; soil--Paison fine sandy loam; two locations; time period--1967 and 1968; evaluation time--25 da
EFFECTS: Results somewhat erratic but generally effective control of weeds at 3.0 kg/ha and initial injury to lettuce but no yield reduction
COMMENTS: DCPA and nitralin gave best weed control, while benefin and the methyl ester of chloramben less effective in controlling weeds; poorest weed control performance observed with bensulide; nitralin, DCPA, benefin, and methyl ester of chloramben caused crop injury if leaching rains followed application; despite early herbicide injury, yields usually not adversely affected
REFERENCE: Monaco, T.J. and Miller, C.H., "Herbicide Activity in Pickling Cucumber," Weed Sci. 20(6):545-548 (1972).

<1516>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3.73 kg/ha
APPLICATION METHODS: Preplant incorporated; 187 l./ha; applied annually over a period of six years in fall or spring; dalapon applied postemergence; combined and sequential treatments also applied
EXPERIMENTAL CONDITIONS: Field study; soils--Sharkey clay, Bosket fine sandy loam; and Dundee silty clay loam; time period--1965 to 1970
EFFECTS: Slight control of johnsongrass with no adverse effect on soybean yield
COMMENTS: Effective johnsongrass control on Dundee silty clay loam followed treatments of nitralin or trifluralin, but 2 years or more of continuous treatment needed for acceptable control
REFERENCE: McWhorter, C.G., "Johnsongrass Control in Soybeans with Trifluralin and Nitralin," Weed Sci. 22(2):111-115 (1974).

<1517>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Squash, summer (CUCURBITA PEPO); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass (DIGITARIA sp.); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 2.5 and 3.0 lb/A
APPLICATION METHODS: Preemergence application; salt (Amiben) and methyl ester (Vegiben) formulations
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of all weeds with both formulations and no injury to squash; also increased squash yield
COMMENTS: Outstanding preplant incorporated treatment was bensulide followed by chloramben, methyl ester applied preemergence; outstanding preemergence treatment for both weed control and yield was chloramben, methyl ester + asulam; crop injury induced by following preplant incorporated treatments: dibutalin, dinitramine (USB 3584), nitralin, and bensulide followed by naptalam applied preemergence
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "Some Promising Herbicides for Weed Control in Summer Squash," Proc. Northeast. Weed Sci. Soc. 28:224-228 (1974).

<1518>

<1518>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Amiben
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate weed control with no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<1519>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Sesame (SESAMUM INDICUM); Pigweed (AMARANTHUS sp.); Barley (HORDEUM VULGARE); Millet, Japanese (ECHINOCHLOA FRUMENTACEA)
EXPERIMENTAL DOSE: 3.0 and 4.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley, mustard, and Japanese millet planted as weed crop
EFFECTS: Poor control of pigweed and millet at 4 lb/A; 3 and 4 lb/A showed good sesame tolerance and poor barley control
COMMENTS: Nominal mustard stand even in untreated plots
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<1520>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Grasses; Broadleaf weeds; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 10 locations in Iowa
EFFECTS: Moderate control of weeds with very slight growth reduction of soybean
COMMENTS: Preplant incorporated herbicides trifluralin, dinitramine, profluralin, alachlor, and vernolate effectively reduced grassy weed populations; tank mix addition of metribuzin and bifenox broadened the spectrum of weeds controlled; overlay treatments of metribuzin were also equally effective in broadening the spectrum of weed control; preemergence treatments provided excellent examples of grass and broadleaf weed control in soybeans
REFERENCE: Jennings, V.M., "Soybean Herbicide Evaluations Across Iowa in 1974," Proc. North Cent. Weed Control Conf. 29:79-83 (1974).

<1521>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 3.4 kg/ha
APPLICATION METHODS: Preemergence spray applied at varied intervals after planting 0, 2, 4, and 8 days)
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Leeper silty clay loam; pot culture
EFFECTS: Effective pigweed control at all application (planting) time intervals and no adverse effect on cucumber at 0 and 2 day intervals
COMMENTS: For 3 weeks after planting, chloramben methyl ester gave complete weed control al all dates of application; DCPA and naptalam gave better weed control when applied at 0 and 2 days; diphenamid gave better control when applied at 0, 2, and 4 days following planting; cucumber survival reduced with application of all herbicides except naptalam at 4 days after planting
REFERENCE: Cole, A.W. and V.L. Etheridge, "Redroot Pigweed and Cucumber Response to Application Time of Herbicides," Advanc. Frontiers Plant Sci. 30:17-24 (1975).

<1522>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Amiben
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 4, 6, and 8 lb/A
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Weed control effectiveness not stated, but injury and yield reduction of tomato
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<1523>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Pepper, hot (CAPSICUM ANNUUM); Santa Maria (PARTHENIUM HYSTEROPHORUS); Nutsedge, purple (CYPERUS ROTUNDUS); (CLEOME CILIATA); (BOERHAVIA DIFFUSA); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); Pinkroot (SPIGELIA ANTHELMIA); Junglerice (ECHINOCHLOA COLONUM); Wiregrass (ELEUSINE INDICA); Sandbur (CENCHRUS ECHINATUS)
EXPERIMENTAL DOSE: 2 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Seed bed trial; application 3 days before sowing
EFFECTS: Pepper seedling emergence and growth equal to hand-weeded plots; weed control barely satisfactory
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<1524>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Amiben
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Grasses; Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI); Foxtail, giant (SETARIA FABERI); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence application; 10 to 30 gal/A at 20 to 30 psi
EXPERIMENTAL CONDITIONS: Field study; locations in 6 states (MI, MO, NE, IL, IA, and OH)
EFFECTS: Effective weed control with no adverse effect on soybean
COMMENTS: CGA-10832 gave good control of prevalent weed species throughout growing season; CGA-11607 and CGA-14397 gave inferior weed control compared to CGA-10832; weed control from trifluralin comparable at equivalent rates to CGA-10832, with no significant differences indicated
REFERENCE: LeBaron, H.M., R.R. Wilson, and T.D. Taylor, "Evaluation of CGA-10832 and Other Herbicides for Soybeans in the North Central States," Proc. N. Cent. Weed Contr. Conf. 26:44-48 (1971).

<1525>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1, 5, 10, 15, and 20 ppm
APPLICATION METHODS: Pre and postemergence treatment
EXPERIMENTAL CONDITIONS: Seeds planted in plastic pots containing vermiculite; pots then immersed in 800 cc Hoagland's solution containing test compound til saturated, re-immersed periodically; after crookstage of development, plants immersed and remained for duration of experiment; average height and weight of untreated soybean plants determined 20 days after planting
EFFECTS: First trifoliate leaves appeared normal but not fully expanded; 50% height reduction at 20 ppm and 50% weight reduction at 3.3 ppm (ED50); severe root stunting at 10 ppm, rudimentary development at 15 and 20 ppm
COMMENTS: ED50 dosages determined from logarithmic plot
REFERENCE: Sutherland, M.L., S.R. McLane, R.D. Hart, and H.L. Raman, "The Response of Soybeans to Several Substituted Benzoic Acids," Hormolog 3(1):5-7 (1961).

<1526>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben
PLANT: Soybean (GLYCINE MAX); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Lamb's-quarters (CHENOPODIUM ALBUM); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Bucks silt loam
EFFECTS: Effective control of all weeds except paricum (moderate control) with very slight soybean injury that did not affect yield
COMMENTS: RH-2512 preemergence provided excellent control of large crabgrass, fall panicum, common lambsquarters, redroot pigweed, and smallflower galinsoga; RH-2915 preemergence provided weed control equivalent to RH-2512
REFERENCE: Hartnett, J.P., "Weed Control in Soybeans with RH-2512 and RH-2915," Proc. Northeast. Weed Sci. Soc. 29:4-8 (1975).

<1527>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-
CHEMICAL COMMON NAME: Amiben
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 35 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; soil -- Tifton sandy loam; time period -- 1959 and 1960
EFFECTS: Moderate weed control with no adverse effect on peanut
COMMENTS: Certain mixtures, which contained sesone, 2,1-DEP, or amiben mixed with DNBP, gave seasonal weed control on band-treated peanuts; compared to herbicides applied singly, mixtures not only increased spectrum of weeds controlled but also permitted use of lowest rate of each component on weeds for which it was most effective
REFERENCE: Hauser, E.W., W.C. Shaw, H.F. Harrison, and S.A. Parham, "Herbicides and Herbicide Mixtures for Weed Control in Peanuts," Weeds 10(2):139-144 (1962).

<1528>
<1528>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-, methyl ester
CHEMICAL COMMON NAME: Chloramben, methyl ester
PLANT: Cucumber (CUCUMIS SATIVUS); Muskmelon (CUCUMIS MELO); Watermelon (CITRULLUS VULGARIS); Squash, winter (CUCURBITA MOSCHATA); Squash, winter (CUCURBITA PEPO); Squash, winter (CUCURBITA MAXIMA)
EXPERIMENTAL DOSE: 3.36 and 10.08 kg/ha
APPLICATION METHODS: Preplant spray; soil incorporation; water soluble (2.0 lb/gal water); G and glomule formulations used in studies not summarized here; a total of 5 different experiments are reported
EXPERIMENTAL CONDITIONS: Greenhouse study; flat culture; evaluation time--15 days
EFFECTS: No effect on Boston Marrow squash; slight growth reduction of muskmelon, Table Queen, and butternut squashes; significant growth reduction of cucumber and watermelon
COMMENTS: Little differences among analogs except amide generally nontoxic to all test crops and weeds; great differences in growth noted among species; when chloramben incorporated in soil, cucumber and watermelon very susceptible to all analogs except amide; muskmelon was tolerant of all analogs; squashes exhibited variable susceptibility
REFERENCE: Ivany, J.A. and R.D. Sweet, "Response of Cucurbits to Certain Analogs of Chloramben," Weed Sci. 19(5):491-495 (1971).

<1529>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-, mixed salts
CHEMICAL COMMON NAME: Chloramben, mixed salts
PLANT: Cucumber (CUCUMIS SATIVUS); Muskmelon (CUCUMIS MELO); Watermelon (CITRULLUS VULGARIS); Squash, winter (CUCURBITA MOSCHATA); Squash, winter (CUCURBITA PEPO); Squash, winter (CUCURBITA MAXIMA)
EXPERIMENTAL DOSE: 3.36 and 10.08 kg/ha
APPLICATION METHODS: Preplant spray; soil incorporation; water soluble (2.0 lb/gal water); G and glomule formulations used in studies not summarized here; a total of 5 different experiments are reported
EXPERIMENTAL CONDITIONS: Greenhouse study; flat culture; evaluation time--15 days
EFFECTS: No effect on muskmelon and butternut squash; slight growth reduction of Table Queen and Boston Marrow squashes; significant growth reduction of cucumber and watermelon
COMMENTS: Little differences among analogs except amide generally nontoxic to all test crops and weeds; great differences in growth noted among species; when chloramben incorporated in soil, cucumber and watermelon very susceptible to all analogs except amide; muskmelon was tolerant of all analogs; squashes exhibited variable susceptibility
REFERENCE: Ivany, J.A. and R.D. Sweet, "Response of Cucurbits to Certain Analogs of Chloramben," Weed Sci. 19(5):491-495 (1971).

<1530>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-, monoammonium salt
CHEMICAL COMMON NAME: Chloramben, ammonium salt
PLANT: Cucumber (CUCUMIS SATIVUS); Muskmelon (CUCUMIS MELO); Watermelon (CITRULLUS VULGARIS); Squash, winter (CUCURBITA MOSCHATA); Squash, winter (CUCURBITA PEPO); Squash, winter (CUCURBITA MAXIMA)
EXPERIMENTAL DOSE: 3.36 and 10.08 kg/ha
APPLICATION METHODS: Preplant spray; soil incorporation; water soluble (2.0 lb/gal water); G and glomule formulations used in studies not summarized here; a total of 5 different experiments are reported
EXPERIMENTAL CONDITIONS: Greenhouse study; flat culture; evaluation time--15 days
EFFECTS: No effect on muskmelon and butternut and Boston Marrow squashes; slight growth reduction of Table Queen squash; significant growth reduction in cucumber and watermelon
COMMENTS: Little differences among analogs except amide generally nontoxic to all test crops and weeds; great differences in growth noted among species; when chloramben incorporated in soil, cucumber and watermelon very susceptible to all analogs except amide; muskmelon was tolerant of all analogs; squashes exhibited variable susceptibility
REFERENCE: Ivany, J.A. and R.D. Sweet, "Response of Cucurbits to Certain Analogs of Chloramben," Weed Sci. 19(5):491-495 (1971).

<1531>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-, triethylamine salt
CHEMICAL COMMON NAME: Amiben, triethylamine salt
PLANT: Witchweed (STRIGA ASIATICA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4, 8, and 12 lb/A
APPLICATION METHODS: Preplanting incorporated treatments
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications; corn planted 5, 10, and 20 days after treatment; soil--Lakeland sand
EFFECTS: Little or no effect on corn stand; poor witchweed control
REFERENCE: Robinson, E.L., Soil-incorporated Pre-planting Herbicides for Witchweed Control," Weeds 9(3):411-415 (1961).

<1532>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-, 2-butoxyethyl ester
CHEMICAL COMMON NAME: Chloramben, butoxy ethyl ester
PLANT: Cucumber (CUCUMIS SATIVUS); Muskmelon (CUCUMIS MELO); Watermelon (CITRULLUS VULGARIS); Squash, winter (CUCURBITA MOSCHATA); Squash, winter (CUCURBITA PEPO); Squash, winter (CUCURBITA MAXIMA)
EXPERIMENTAL DOSE: 3.36 and 10.08 kg/ha
APPLICATION METHODS: Preplant spray; soil incorporation; water soluble (2.0 lb/gal water); G and glomule formulations used in studies not summarized here; a total of 5 different experiments are reported
EXPERIMENTAL CONDITIONS: Greenhouse study; flat culture; evaluation time--15 days
EFFECTS: No effect on muskmelon, butternut, and Boston Marrow squashes; slight growth reduction in Table Queen squash; significant growth reduction of cucumber and watermelon
COMMENTS: Little differences among analogs except amide generally nontoxic to all test crops and weeds; great

<1532> CONT.
differences in growth noted among species; when chloramben incorporated in soil, cucumber and watermelon very susceptible to all analogs except amide; muskmelon was tolerant of all analogs; squashes exhibited variable susceptibility
REFERENCE: Ivany, J.A. and R.D. Sweet, "Response of Cucurbits to Certain Analogs of Chloramben," Weed Sci. 19(5):491-495 (1971).

<1533>
CHEMICAL NAME: Benzoic acid, 3-amino-2,5-dichloro-, 3-hydroxypropyl ester
CHEMICAL COMMON NAME: Chloramben, hydroxy propyl ester
PLANT: Cucumber (CUCUMIS SATIVUS); Muskmelon (CUCUMIS MELO); Watermelon (CITRULLUS VULGARIS); Squash, winter (CUCURBITA MOSCHATA); Squash, winter (CUCURBITA PEPO); Squash, winter (CUCURBITA MAXIMA)
EXPERIMENTAL DOSE: 3.36 and 10.08 kg/ha
APPLICATION METHODS: Preplant spray; soil incorporation; water soluble (2.0 lb/gal water); G and glomule formulations used in studies not summarized here; a total of 5 different experiments are reported
EXPERIMENTAL CONDITIONS: Greenhouse study; flat culture; evaluation time--15 days
EFFECTS: No effects on muskmelon, butternut, and Boston Marrow squashes; slight growth reduction in Table Queen squash; significant growth reduction in cucumber and watermelon
COMMENTS: Little differences among analogs except amide generally nontoxic to all test crops and weeds; great differences in growth noted among species; when chloramben incorporated in soil, cucumber and watermelon very susceptible to all analogs except amide; muskmelon was tolerant of all analogs; squashes exhibited variable susceptibility
REFERENCE: Ivany, J.A. and R.D. Sweet, "Response of Cucurbits to Certain Analogs of Chloramben," Weed Sci. 19(5):491-495 (1971).

<1534>
CHEMICAL NAME: Benzoic acid, 3-amino,2,5-dichloro-
CHEMICAL COMMON NAME: Chloramben, acid
PLANT: Cucumber (CUCUMIS SATIVUS); Muskmelon (CUCUMIS MELO); Watermelon (CITRULLUS VULGARIS); Squash, winter (CUCURBITA MOSCHATA); Squash, winter (CUCURBITA PEPO); Squash, winter (CUCURBITA MAXIMA)
EXPERIMENTAL DOSE: 3.36 and 10.08 kg/ha
APPLICATION METHODS: Preplant spray; soil incorporation; water soluble (2.0 lb/gal water); G and glomule formulations used in studies not summarized here; a total of 5 different experiments are reported
EXPERIMENTAL CONDITIONS: Greenhouse study; flat culture; evaluation time--15 days
EFFECTS: No effect on muskmelon; slight growth reduction in squashes; significant growth reduction in cucumber and watermelon
COMMENTS: Little differences among analogs except amide generally nontoxic to all test crops and weeds; great differences in growth noted among species; when chloramben incorporated in soil, cucumber and watermelon very susceptible to all analogs except amide; muskmelon was tolerant of all analogs; squashes exhibited variable susceptibility
REFERENCE: Ivany, J.A. and R.D. Sweet, "Response of Cucurbits to Certain Analogs of Chloramben," Weed Sci. 19(5):491-495 (1971).

<1535>
CHEMICAL NAME: Benzoic acid, 3-chloro-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10 and 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--wheat growth normal at 10 lb/A, abnormal at 30 lb/A, cabbage growth abnormal at both 10 and 30 lb/A but more pronounced at 30 lb/A; Petri dish test--91, 95, and 64% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1536>
CHEMICAL NAME: Benzoic acid, 3-chloro-
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.001 and 0.01 M
APPLICATION METHODS: Leaves immersed in 400 ml solutions containing test compound and 1% sucrose
EXPERIMENTAL CONDITIONS: Barley grains germinated for 6 days, leaves then subdivided into 10-g portions and immersed in solutions for 24 hr; CO(2) output and sucrose uptake estimated at 12-hr intervals; tissues dried at end of test and analyzed for carbohydrate content
EFFECTS: CO(2) output same as control at 0.001 M but decreased at 0.01 M; sugar uptake decreased at 0.001 M, increased during first 12 hr at 0.01 M but completely ceased the second 12 hr; carbohydrate fractions decreased compared to control
COMMENTS: Possible that chlorobenzoic acids changed normal pathway of carbohydrate metabolism so that most carbohydrates transformed to non-sugar substances excreted into external media due to increased permeability of cells in presence of benzoic derivatives
REFERENCE: Naguib, M.I., "Effect of Benzoic Acid and its Derivatives on Plant Metabolism," Can. J. Bot. 41:939-946 (1963).

<1537>
<1537>
CHEMICAL NAME: Benzoic acid, 3-nitro-, hydrazide
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.165, 0.325, and 0.650 ug/ml
APPLICATION METHODS: Continuous exposure of root tips to solution--5 roots from each seedling fixed at different intervals during 26 hr exposure period
EXPERIMENTAL CONDITIONS: Roots fixed in alcohol-acetic acid, slides prepared as Feulgen squashes
EFFECTS: Several nuclear bridges observed--(1) nuclei with incipient bridge formation, characterized by slight protusion on nuclear envelope, (2) a neck subtending protusion, (3) slightly elongated bridge, (4) extremely elongated bridge, and (5) seemingly daughter nuclei held together by comparatively short nuclear bridge.
COMMENTS: Induced abnormal mitosis suggested as cause of nuclear bridges; frequency of nuclear bridges increased with concentration and treatment duration; observed mitotic abnormalities--failure of nuclear membrane to dissolve, chromosome contraction, bimitotic cells, apparent telosynapsis, and hypodiploid cells; suggestion that test compound affects RNA metabolism and subsequent chemical cytogentic cell cycle programming
REFERENCE: Bempong, M.A., "Induction of Nuclear Bridges in VICIA FABA Root Meristematic Cells by m-Nitrobenzhydrazide," Trans. Am. Micros. Soc. 93(1):45-51 (1974).

<1538>
CHEMICAL NAME: Benzoic acid, 3,4-dichloro-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect on shoot emergence
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1539>
CHEMICAL NAME: Benzoic acid, 3,4-dichloro-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse effect on peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1540>
CHEMICAL NAME: Benzoic acid, 3,4-dihydroxy-
CHEMICAL COMMON NAME: Protocatechuic acid
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 1X10(-5) to 1X10(-3)M
APPLICATION METHODS: Seed germination; addition to soil
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--30 to 24 C evaluation time--5 da; greenhouse study; pot culture
EFFECTS: Stimulated growth of radicle and plumule but inhibited seedling growth at highest concentrations; no adverse effect on germination percentage
COMMENTS: Lower concentrations of vanillic, salicylic, p-hydroxybenzoic, p-coumaric, protocatechuic, and fumaric acids stimulatory to development of radicals and plumules of paddy seeds; increasing levels of acids decreased favourable effect, except that of fumaric acid; root and shoot growth of paddy seedlings retarded even at lower concentrations, and higher levels appreciably detrimental
REFERENCE: Gaur, A.C. and R.P. Pareek, "A Study on the Effect of Certain Phenolic Acids and Fumaric Acid in Soil on the Development of Paddy Seedlings and Nitrogen-Fixing Bacteria," Zbl. Bakt. Abt. II. 131:148-156 (1976).

<1541>
CHEMICAL NAME: Benzoic acid, 3,5,6-trichloro-2-methoxy-monoethanolamine salt
PLANT: Witchweed (STRIGA ASIATICA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4, 8, and 12 lb/A
APPLICATION METHODS: Preplanting incorporated treatments
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications; corn planted 5, 10, and 20 days after treatment; soil--Lakeland sand
EFFECTS: Highly effective witchweed control; little or no effect on corn stand
REFERENCE: Robinson, E.L., Soil-incorporated Pre-planting Herbicides for Witchweed Control," Weeds 9(3):411-415 (1961).

<1542>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Thistle, Canada (CIRSIUM ARVENSE)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Environment alchamber; photoperiod--16 hr; temperature--25 C (day) and 21 C (night); RH--70%; 7 ecotypes of Canada thistle studied
EFFECTS: Considerable leaf damage but relatively little observable damage to roots although at 27 C there was considerable dry weight reduction of roots compared to plants grown at 16 and 21 C; ecotypic response was extremely varied
REFERENCE: Hunter, J.H. and L.W. Smith, "Environment and Herbicide Effects on Canada Thistle Ecotypes," Weed Sci. 20(2):163-166 (1972).

<1543>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1x 10(-4), 1x 10(-6), and 1x 10(-8)m
APPLICATION METHODS: Herbicide incorporation in tissue culture agar nutrient medium
EXPERIMENTAL CONDITIONS: Laboratory study; tissue culture; tissue source--soybean cotyledons; herbicides incorporated into nutrient growth medium; temperature--30 C; incubation time--15 days
EFFECTS: Reduction in tissue growth at 10(-4)M but significant increased growth at 10(-6)M and 10(-8)M; greater reduction in growth occurred when dicamba was used in combination with 2,4,5-T at 10(-4)M and 10(-6)M, but growth stimulation about same at 10(-8)M; in combination with picloram, growth reduction occurred at 10(-4)M but no effect on growth occurred at 10(-6)M or 10(-8)M
COMMENTS: Combinations of 2,4,5-T, dicamba, or picloram not more phytotoxic than each herbicide applied alone; similar mechanisms of action postulated
REFERENCE: Bovey, R.W., J.R. Baur, and J.D. Diaz-Colon, "Phytotoxicity of 2,4,5-T, Picloram, and Dicamba, Alone and in Mixtures in Tissue Culture," Weed Sci. 22(2):191-192 (1974).

<1544>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Parsley-piert (ALCHEMILLA MICROCORPA); Henbit (LAMIUM AMPLEXICAULE); Chickweed, common (STELLARIA MEDIA); Speedwell, corn (VERONICA ARVENSIS); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 1.1 and 2.2 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l./ha; surfacatant--0.5%
EXPERIMENTAL CONDITIONS: Field study; 3 locations in GA; time period--1972-1974; evaluation time--42 to 85 days; bermudagrass dormant when sprayed
EFFECTS: Effective control of parsley-piert (2 of 4 trials) and chickweed; moderate control of corn speedwell even at higher rate and with 2 applications; no adverse effect on bermudagrass
REFERENCE: Johnson, B.J., "Broadleaf Weed Control in Dormant Bermudagrass Turf," Agron. J. 67(1):689-692 (1975).

<1545>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Sowthistle, perennial (SONCHUS ARVENSIS); Sowthistle, annual (SONCHUS OLERACEUS)
EXPERIMENTAL DOSE: 17.5 g/ha
APPLICATION METHODS: Applications broadcast over pots when plants were 10 to 15 cm tall using a pot sprayer delivering 54 l./ha at 2.46 kg/cm2 pressure
EXPERIMENTAL CONDITIONS: Greenhouse experiments; embryo culture assured survival of seedlings; observations made 30 days after herbicide treatments; treatments applied to perennial and annual sowthistle plants and to progeny (perennial x annual) backcrossed with parents
EFFECTS: Annual sowthistle--100% recovery; perennial sowthistle-52% recovery; backcrosses to annual sowthistle--59-73% recovery; backcrosses to perennial sowthistle--28-44% recovery
COMMENTS: Annual sowthistle and backcrosses to annual sowthistle more tolerant to 2,4-D and dicamba than perennial sowthistle or backcrosses to perennial sowthistle; natural crosses may explain perennial sowthistle variability to herbicides
REFERENCE: Alam, S., A.R. Bell, T.S. Hsieh, J.D. Nalewaja, and A.B. Schooler, "Herbicide Response of Interspecific Sowthistle Crosses," Weed Sci. 21(3):189-193(1973).

<1546>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Pigweed, smooth (AMARANTHUS HYBRIDUS); Amaranth, palmer (AMARANTHUS PALMERI); Pigweed, tumble (AMARANTHUS ALBUS); Amaranth, spiny (AMARANTHUS SPINOSUS)
EXPERIMENTAL DOSE: 0.125 and 0.25 lb/A
APPLICATION METHODS: Postemergence applications
EXPERIMENTAL CONDITIONS: Field study; applications made when plants 3 to 6 inches tall; observations made 13 days after treatment
EFFECTS: Similar control at either rate; 50-60% control of smooth, redroot, and tumble pigweed, 40-70% control of spiny and Palmer amaranth
COMMENTS: Little variation in pigweed susceptibility to preplant and preemergence herbicides tested, (no specific data given); differences in pigweed susceptibility noted using postemergence herbicides
REFERENCE: Santelmann, P.W. and L. Evetts, "Germination and Herbicide Susceptibility of Six Pigweed Species," Weed Sci. 19(1):51-54 (1971).

<1547>
<1547>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Castorbean, volunteer (RICINUS COMMUNIS); Cotton (GOSSYPIUM HIRSUTUM); Sorghum, grain (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.27 and 0.50 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; 188 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; time period--1968 to 1970
EFFECTS: Moderate control of volunteer castorbean at 0.50 kg/ha with no adverse effect on crops
COMMENTS: Volunteer castorbean most effectively controlled by preemergence application of propazine in grain sorghum and by fluometuron in cotton; preplant applications of propazine not as effective as preemergence treatments.
REFERENCE: Smith, D.T., A.W. Cooley, D.O. Mooney, and A.F. Wiese, "Herbicidal Control of Volunteer Castorbean," Weed Sci. 20(4):338-340 (1972).

<1548>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Bursage, wollyleaf (FRANSERIA TOMENTOSA)
EXPERIMENTAL DOSE: 2.2 kg/ha; dimethylamine salt
APPLICATION METHODS: Soil sterilant application with and without incorporation; postemergence sprays at varied stages of plant development; liquid sprays at 188 l/ha; pellets or granules broadcast by hand
EXPERIMENTAL CONDITIONS: Field study; non-crop areas; time period--1962 to 1968; evaluation time--up to 3 yr; soil--clay loam
EFFECTS: Moderate 12-month control of bursage
COMMENTS: Fenac controlled woollyleaf bursage for 3 years in noncropped areas; effective control of woollyleaf bursage obtained when treated at bud stage or earlier with ester formulation of 2,4-D
REFERENCE: Smith, D.T., A.F. Wiese, and A.W. Cooley, "Woollyleaf Bursage Response to Selected Herbicides," Weed Sci. 20(6):554-556 (1972).

<1549>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Hibiscus (HIBISCUS ROSA)
EXPERIMENTAL DOSE: 4.9 to 315 micro g/leaf
APPLICATION METHODS: Applied as droplets to leaves with micropipette
EXPERIMENTAL CONDITIONS: Field study (hibiscus and guava); greenhouse study (sorghum and cotton)
EFFECTS: Limited desiccation and no defoliation at 315 micro g/leaf
COMMENTS: Pentachlorophenol and AP-20 produced most rapid desiccation at high dosages; usually as effective as PCP and AP-20 within 1 to 2 days after treatment, and produced more extensive desiccation at lower dosages, especially on hibiscus, sorghum, and cotton; diquat, paraquat, cacodylic acid, and AP-20 produced complete defloiation of hibiscus within 5 days after treatment but diquat and paraquat were more effective at lower dosages than other defoliants; diquat completely defoliated hibiscus regardless of placement on leaf, but higher dosages required for effective desiccation when applied non-uniformly over leaf
REFERENCE: Bovey, R.W. and F.R. Miller, "Desiccation and Defoliation of Plants by Different Herbicides and Mixtures," Agron. J. 60(1):700-702 (1968).

<1550>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3) M, 10(-4) M, 10(-5), and 10(-6) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-3) and 10(-4) M; moderate control at 10(-5)
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1551>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Bindweed, field (CONVOLVULUS ARVENSIS)
EXPERIMENTAL DOSE: 1, 2, 4 and 8 lb/A
APPLICATION METHODS: Fall, spring and early summer applications
EXPERIMENTAL CONDITIONS: Weed control evaluated on basis of commercial control (70 to 100%); 3 to 4 replications
EFFECTS: Commercially acceptable bindweed control at all rates except 2 lb/A--only one test result reported for 2 lb/A
COMMENTS: Article primarily concerns glyphosate as effective perennial weed killer--described as being nonselective
REFERENCE: Lange, A., H. Kempen, W. McHenry, and O. Leonard, "Roundup--A New Perennial Weed Killer," Calif. Agric. 27(2):6-7 (1973).

<1552>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 0.25 lb/A
APPLICATION METHODS: Postemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 12 locations in IA
EFFECTS: Moderate broadleaf weed control
COMMENTS: Preplant-incorporated treatments more consistent in grass and broadleaf weed control than preemergence treatments; preplant-incorporated herbicide butylate plus R-25788 and EPTC plus R-25788 and preplant or preemergence chemical such as alachlor and CGA-24705 provided good to excellent grass control but needed assistance of broadleaf controlling herbicides such as atrazine, cyanazine, and procyazine
REFERENCE: Studt, D.M. and V.M. Jennings, "Corn Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:146-150 (1975).

<1553>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat, and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--50% or greater inhibition in sorghum, oat, and cucumber at 1 and 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 ppm, 50% or greater in both at 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<1554>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Spurge, spotted (EUPHORBIA MACULATA); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence spray; June application
EXPERIMENTAL CONDITIONS: Golf course green; randomized complete block designs with 4 replications; turf appearance, turf density, and weed control assessed; untreated check as control
EFFECTS: Turf appearance--82, 100, and 103% of untreated check 7, 18, and 27 days after treatment respectively; turf density--107% of check 27 days after treatment; weed control--50% control 27 days after treatment
COMMENTS: Second application possibly needed for acceptable weed control; bermudagrass injury temporary; herbicide combinations also tested
REFERENCE: Johnson, B.J., "Spotted-Spurge Control in Bermudagrass Golf Greens with Herbicides: A Preliminary Report," Ga. Agric. Res. 18(2):24-25 (1976).

<1555>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.1 to 100 ppm w
APPLICATION METHODS: Addition to Hoagland's nutrient solution and to soils
EXPERIMENTAL CONDITIONS: Laboratory study; culture in nutrient solution and in soils
EFFECTS: Inhibition of germination and growth at less than 10 ppm
COMMENTS: 2,3,6-TBA less toxic in oats than either dicamba or amiben, latter two herbicides similar in phytotoxicity; in soil, dicamba most phytotoxic in each of four soils used, while 2,3,6-TBA and amiben similar in toxicity in all soils except organic soil, in which amiben was less phytotoxic than 2,3,6-TBA
REFERENCE: Donaldson, T.W. and C.L. Foy, "The Phytotoxicity and Persistence in Soils of Benzoic Acid Herbicides," Weeds 13(3):195-202 (1965).

<1556>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bromegrass, smooth (BROMUS INERMIS); Orchard grass (DACTYLIS GLOMERATA); Wheatgrass, crested (AGROPYRON CRISTATUM); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 0.3, 0.6, 1.1, 2.2, 4.5 and 6.7 kg/ha
APPLICATION METHODS: September and April applications; postemergence treatment in water at spray volume of 127 l./ha and pressure of 2.1 kg/cm(2)
EXPERIMENTAL CONDITIONS: Palouse silt loam; all grasses treated in seedling stage with 1.1 kg/ha bromoxynil to control broadleaf weeds; randomized block experimental design with 3 to 4 replications
EFFECTS: Bluegrass--significant grass control with September application of 6.7 kg/ha and with April application of 2.2, 4.5 and 6.7 kg/ha; bromegrass--significant control in September at 1.1 kg/ha and above, and at all rates with April application orchardgrass--significant control with September application at 2.2 kg/ha and above, and at all rates in April; wheatgrass--significant control with

<1556>
<1556> CONT.
September application of 1.1 kg/ha and above, and at all rates in April; fescue--significant control in September at 2.2 kg/ha and above, and with 2.2 kg/ha and above in April
COMMENTS: April applications generally more effective than September treatments
REFERENCE: Canode, C.L., "Tolerance of Five Cool-Season Perennial Grasses to Selected Herbicides," Agron. J. 66:683-686 (1974).

<1557>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Plants
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Postemergence spray; two applications
EXPERIMENTAL CONDITIONS: Field study, road cracks and road right-of-way
EFFECTS: Moderate Weed Control
COMMENTS: Initial postpaving treatment made with beginning of growth in spring; TCA applied at rate of 24 lb/ft-mile, and subsequent applications made as needed; treatment interval about 30 days
REFERENCE: McCully, W. G., W. J. Bowmer, and A. F. Wiese, "Control of Grasses and Weeds Growing in Asphalt Pavements," PANS 16(3):497-504 (1970).

<1558>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Kochia (KOCHIA SCOPARIA)
EXPERIMENTAL DOSE: 0.14 and 0.28 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Fargo silty clay; time period--1968 to 1970
EFFECTS: Moderate damage to plants beginning flowering and slight damage to plants in full flower
COMMENTS: Plant size and maturity influenced response of kochia to herbicides, but differences in response among selections could not be explained by variations in size or maturity; all kochia selections were tolerant to picloram
REFERENCE: Bell, A.R., J.D. Walewaha, and A.B. Schooler, "Response of Kochia Selections to 2,4-D, Dicamba, and Pichloram," Weed Sci. 20(5):458-461 (1972).

<1559>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Canarygrass, reed (PHALARIS ARUNDINACEA); Quackgrass (AGROPYRON REPENS); Bromegrass, smooth (BROMUS INERMIS); Bluegrass, annual (POA ANNUA); Fescue, creeping red (FESTUCA RUBRA); Redtop (AGROSTIS ALBA)
EXPERIMENTAL DOSE: 22.4 kg/ha
APPLICATION METHODS: Postemergence spray; 374 l./ha
EXPERIMENTAL CONDITIONS: Field study; evaluation time--3 mos; weeded manually to produce uniform stands
EFFECTS: Effective control of reed canarygrass; poor control of bluegrass; moderate control of remaining grasses
COMMENTS: Amitrole and dalapon combinations more toxic to reed canarygrass, smooth brome, and redtop; pyrichlor toxic to all grasses
REFERENCE: Hodgson, J.M., "Differential Response of Ditchbank Grasses to Herbicides," Weed Sci. 21(5):421-423 (1973).

<1560>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Horehound (MARRUBIUM VULGARE)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Postemergence spray; 25 gal/A
EXPERIMENTAL CONDITIONS: Field study; evaluation time--2.5 and 12 mos
EFFECTS: Moderate control of horehound
COMMENTS: Control of horehound plants possible with both 2,4-D and silvex
REFERENCE: Stritzke, J. F., "Germination Characteristics and Chemical Control of Horehound," J. Range Manag. 28(3):225-226 (1975).

<1561>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Quinorexone
PLANT: Marigold, bur (BIDENS PILOSA); Sorrel, wood (OXALIS sp.); (KYLLINGA MONOCEPHALA); Navelwort (HYDROCOTYLE BONARIENSIS); (KYLLINGA POLYPHYLLA); (PASPALUM PANICULATUM); (AGERATUM CONYZOIDES); Nutsedge, purple (CYPERUS ROTUNDUS); Crabgrass (DIGITARIA HORIZONTALIS); Crabgrass (DIGITARIA TIMORENSIS); Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 1.34 to 5.38 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; December trial; 2 replicates; weed assessment in cane field 72 days after spraying
EFFECTS: Weed control--55.1 to 61.9%, control greatest at higher rates; cane germination increased over control
COMMENTS: Weed results tabulated together
REFERENCE: McIntyre, G., "Weed Control 1. Evaluation of New Herbicides," Mauritius Sugar Ind. Res. Inst., Annu. Rep. 18:117-119 (1970).

<1562>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Corn (ZEA MAYS); Nutsedge, yellow (CYPERUS ESCULENTUS); Foxtail, giant (SETARIA FABERI); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Mattapex silt loam; time period--1974 and 1975
EFFECTS: Moderate weed control and slight initial damage of corn but no adverse effect on yield
COMMENTS: Best control of weed species achieved with combination of materials; only RP-20630 and RP-15018, at high rates, caused corn injury and reduced yields
REFERENCE: Parochetti, J.V., G.W. Burt, and A.W. Bell, "Triazines, Acetanilides, and Several Other Herbicides for Weed Control in Corn," Proc. N.E. Weed Sci. Soc. 30:48-54 (1976).

<1563>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Dock, broad-leaf (RUMEX OBTUSIFOLIUS); Dock, curly (RUMEX CRISPUS)
EXPERIMENTAL DOSE: 0.25 to 6.00 lb/A; WP and G
APPLICATION METHODS: Postemergence spray and broadcast
EXPERIMENTAL CONDITIONS: Field study; established grasslands; time period--1970-1972; 12 sites; applied in varied combinations and schedules; G less effective
EFFECTS: Moderate control of docks
COMMENTS: No herbicide achieved total control; double spraying of dicamba particularly effective but at exorbitant cost for farm-scale use; next best control attained by dicamba-based herbicides sprayed in May successively for two years
REFERENCE: Frame, J. and R.D. Harkness, "Herbicides for Control of Docks (RUMEX spp.) in Grassland," Proc. 11th. Br. Weed Cont. Conf. 11(1):323-330 (1972).

<1564>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Clover, white (TRIFOLIUM REPENS); Chickweed, mouse-ear (CERASTIUM VISCOSUM); Dandelion, common (TARAXACUM OFFICINALE)
EXPERIMENTAL DOSE: 0.25 and 0.50 lb/A
APPLICATION METHODS: Foliar spray; 50 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1974 and 1975; soil--Bridgehampton silt loam
EFFECTS: At 0.5 lb/A, effective weed control except for dandelion (moderate control)
COMMENTS: Variable control of dandelion observed with all applications of 2,4-D; combinations of 2,4-D with one or more herbicides -- dicamba, mecoprop or silvex -- provided good broad spectrum control and in certain cases greater than 90 percent control; a newer material RO-7-6145 gave good control of chickweed and dandelion; PP-831 provided better than 90 percent control of clover and chickweed
REFERENCE: Jagschitz, J.A. and L.H. Barrett, "Chemical Control of Broadleaved Weeds in Cool Season Turfgrasses," Proc. N.E. Weed Sci. Soc. 30:385-388 (1976).

<1565>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-
CHEMICAL COMMON NAME: Dicamba
PLANT: Mesquite, honey (PROSOPIS JULIFLORA); Huisache (ACACIA FARNESIANA); Oak, live (QUERCUS VIRGINIANA)
EXPERIMENTAL DOSE: 0.56, 1.12, and 2.24 kg/ha
APPLICATION METHODS: Postemergence sprays for brush control; granular herbicides spread by hand broadcasting, liquid herbicides sprayed at volume of 187 l./ha in acetone or water; polymerized herbicides sprayed in acetone (spring) and water (fall)
EXPERIMENTAL CONDITIONS: Field study; native stand and nursery grown brush plants; three replicates per treatment; randomized block experimental design
EFFECTS: Moderate control of honey mesquite and huisache with slight control of live oak
COMMENTS: Generally no significant differences in effectiveness between conventional and polymerized herbicides on honey mesquite
REFERENCE: Bovey, R.W., R.E. Meyer, R.D. Baker, and J.R. Baur, "Polymerized Herbicides for Brush Control," Weed Sci. 20(4):332-335 (1972).

<1566>
CHEMICAL NAME: Benzoic acid, 3,6-dichloro-2-methoxy-, monoethanolanine salt
PLANT: Witchweed (STRIGA ASIATICA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4, 8, and 12 lb/A
APPLICATION METHODS: Preplanting incorporated treatments
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications; corn planted 5, 10, and 20 days after treatment; soil--Lakeland sand
EFFECTS: 4 lb/A gave highest corn yield of all compounds tested; 8 and 12 lb/A gave excellent witchweed control but reduced corn stand
REFERENCE: Robinson, E.L., Soil-incorporated Pre-planting Herbicides for Witchweed Control," Weeds 9(3):411-415 (1961).

<1567>
<1567>
CHEMICAL NAME: Benzoic acid, 4-chloro-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse effect on peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<1568>
CHEMICAL NAME: Benzoic acid, 4-chloro-
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.001 M
APPLICATION METHODS: Leaves immersed in 400 ml solutions containing test compound and 1% sucrose
EXPERIMENTAL CONDITIONS: Barley grains germinated for 6 days, leaves then subdivided into 10-g portions and immersed in solutions for 24 hr; CO(2) output and sucrose uptake estimated at 12-hr intervals; tissues dried at end of test and analyzed for carbohydrate content
EFFECTS: CO(2) output slightly reduced; sucrose uptake retarded; carbohydrate fractions decreased compared to control
COMMENTS: Possible that chlorobenzoic acids changed normal pathway of carbohydrate metabolism so that most carbohydrates transformed to non-sugar substances excreted into external media due to increased permeability of cells in presence of benzoic derivatives
REFERENCE: Naguib, M.I., "Effect of Benzoic Acid and its Derivatives on Plant Metabolism," Can. J. Bot. 41:939-946 (1963).

<1569>
CHEMICAL NAME: Benzoic acid, 4-hydroxy-
PLANT: Clover, red (TRIFOLIUM PRATENSE)
EXPERIMENTAL DOSE: 1:20 dilution to undiluted filtrate
APPLICATION METHODS: Solution soak of pregerminated seed
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination for 24 hr prior to solution exposure; evaluation time--24 hr
EFFECTS: No inhibition of root elongation
COMMENTS: Inhibition of root-elongation by culture filtrates of R. LEGUMINICOLA mainly due to large amounts of cinnamic, phenylacetic, benzoic, and o-coumaric acids; in the case of R. SOLANI, it was restricted to phenylacetic and m-hydroxyphenylacetic acids in addition to an unidentified acid
REFERENCE: Mizuno, M., K. Kohmoto, S. Nishimura, and N. Nishihara, "Pathochemical Studies on Rhizoctonia Disease. V. Phytotoxic metabolites of RHIZOCTONIA LEGUMINICOLA," J. Fac. Agric. Tottori Univ. 9:1-7 (1974).

<1570>
CHEMICAL NAME: Benzoic acid, 4-hydroxy-
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 1X10(-5) to 1X10(-3)M
APPLICATION METHODS: Seed germination; addition to soil
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--30 to 34 C; evaluation time--5 da; greenhouse study; pot culture
EFFECTS: Generally stimulator to radicle and plumule except at 1X10(-3)M, which inhibited radicle growth; generally inhibitory to seedling growth; no adverse effect on germination percentage
COMMENTS: Lower concentrations of vanillic, salicylic, p-hydroxybenzoic, p-coumaric, protocatechuic, and fumaric acids stimulatory to development of radicals and plumules of paddy seeds; increasing levels of acids decreased favourable effect, except that of fumaric acid; root and shoot growth of paddy seedlings retarded even at lower concentrations, and higher levels appreciably detrimental
REFERENCE: Gaur, A.C. and R.P. Pareek, "A Study on the Effect of Certain Phenolic Acids and Fumaric Acid in Soil on the Development of Paddy Seedlings and Nitrogen-Fixing Bacteria," Zbl. Bakt. Abt. II. 131:148-156 (1976).

<1571>
CHEMICAL NAME: Benzoic acid, 4-hydroxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 46, 40, 37, and 34% prowth at 100, 200, 300, and 400 ppm, respectively
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<1572>
CHEMICAL NAME: Benzoic acid, 4-hydroxy-3-methoxy-
CHEMICAL COMMON NAME: Vanillic acid
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 1X10(-5) to 1X10(-3) M
APPLICATION METHODS: Seed germination; addition to soil
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--30 to 34 C; evaluation time--5 da; greenhouse study; pot culture
EFFECTS: Generally stimulatory to radicle and plumule but inhibited radicle growth at 1X10(-3.25) M and inhibited seedling growth at all concentrations; no adverse effect on germination percentage
COMMENTS: Lower concentrations of vanillic, salicylic, p-hydroxybenzoic, p-coumaric, protocatechuic, and fumaric acids stimulatory to development of radicals and plumules of paddy seeds; increasing levels of acids decreased favourable effect, except that of fumaric acid; root and shoot growth of paddy seedlings retarded even at lower concentrations, and higher levels appreciably detrimental
REFERENCE: Gaur, A.C. and R.P. Pareek, "A Study on the Effect of Certain Phenolic Acids and Fumaric Acid in Soil on the Development of Paddy Seedlings and Nitrogen-Fixing Bacteria," Zbl. Bakt. Abt. II. 131:148-156 (1976).

<1573>
CHEMICAL NAME: Benzoic acid, 4-hydroxy-3-methoxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 77, 64, 49, and 46% growth at 100, 200, 300, and 400 ppm, respectively
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<1574>
CHEMICAL NAME: Benzoic acid, 4-hydroxy-3,5-dimethoxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 78, 81, 72, and 69% growth at 100, 200, 300, and 400 ppm, respectively
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<1575>
CHEMICAL NAME: Benzoic acid, 5-(2,4-dichlorophenoxy)-2-nitro-, methyl ester
CHEMICAL COMMON NAME: MC-4379
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA)
EXPERIMENTAL DOSE: 0.5-8.0 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Neither satisfactory crop tolerance or weed control obtained in preplanting applications
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<1576>
CHEMICAL NAME: Benzoic acid, 5-(2,4-dichlorophenoxy)-2-nitro-, methyl ester
CHEMICAL COMMON NAME: Bifenox
PLANT: Plants
EXPERIMENTAL DOSE: 1.0 to 2.0 lb/A
APPLICATION METHODS: Formulation--2 lb EC and 80% WP; preemergence applications (1.5 to 2.0 lb/A); postemergence applications (1.0 to 1.5 lb/A)
EXPERIMENTAL CONDITIONS: Tests conducted in crops such as soybeans, corn, sorghum, small grains and rice
EFFECTS: Broadleaved weeds--90% or better control in 42 tests, 75-90% control in 6 tests and less than 75% in 4 tests; grasses--90% or better control in 10 tests, 75-90% in 17 tests and less than 75% in 24 tests; some early toxicity to crops which usually disappears
COMMENTS: General report of bifenox by mobil chemical company; primarily a broadleaf herbicide; works well in combination with other selected herbicides
REFERENCE: Kruger, P.J., "Modown (MC-4379), A New Broadleaf Herbicide," Proc. South. Weed Sci. Soc. 26:194-195 (1973).

<1577>
<1577>
CHEMICAL NAME: Benzoic acid, 5-(2,4-dichlorophenoxy)-2-nitro-, methyl ester
CHEMICAL COMMON NAME: Bifenox
PLANT: Ash, green (FRAXINUS PENNSYLVANICA); Poplar, yellow (LIRIODENDRON TULIPIFERA); Walnut, black (JUGLANS NIGRA); Pine, white (PINUS STROBUS); Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 3.0 and 6.0 kg/ha; 80% WP
APPLICATION METHODS: Posttransplant spray; 29 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Ross-Geneco complex
EFFECTS: Growth stimulation of hardwoods and no effect on evergreens
COMMENTS: Oxadiazon, napropamide and simazine produced very favorable results at low rates; simazine only injurious to green ash; diphenamid and DCPA effective without incorporation only at extremely high rates; tolerance range for Velpar and RP-23465 for use on newly planted seedlings appear very small; bifenox as used did not appear to be detrimental to seedlings
REFERENCE: Wiltrout, T.R. and H.A. Holt, "Prospects of Controlling Vegetation in New Forest Plantations," Proc. N. Cent. Weed Control Conf. 30:31-36 (1975).

<1578>
CHEMICAL NAME: Benzoic acid, 5-(2,4-dichlorophenoxy)-2-nitro-, methyl ester
CHEMICAL COMMON NAME: MC-4379
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.0 lb/A; EC
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: Moderate control of weeds with slight damage initially to corn
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<1579>
CHEMICAL NAME: Benzoic acid, 5-(2,4-dichlorophenoxy)-2-nitro-, methyl ester
CHEMICAL COMMON NAME: MC-4379
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence application; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (5-10-10) and diazinon (4.0 lb/A) applied before disking
EFFECTS: Moderate control of weeds with slight injury to corn
COMMENTS: Combination preemergence or postemergence treatments about as effective as herbicides alone
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<1580>
CHEMICAL NAME: Benzoic acid, 5-(2,4-dichlorophenoxy)-2-nitro-, methyl ester
CHEMICAL COMMON NAME: MC-4379
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Panicum, fall (PANICUM DICHOTOMIFLORUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A; EC and WP formulation
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold sandy loam; evaluation time--approx. 2 mos; corn harvested at maturity for yield data
EFFECTS: Effective control of lambsquarters and pigweed; poor control of crabgrass; moderate control of remaining weeds; little or no effect on corn varieties; no apparent difference in EC or WP applications
COMMENTS: Seneca Chief most susceptible variety to yield reductions particularly from poorer herbicide treatments; all varieties showed injury from metribuzin; the best herbicide treatment was alachlor + MC 4379 80W
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "The Response of Several Sweet Corn Varieties to Various Herbicides and Herbicide Combinations," Proc. Northeast. Weed Sci. Soc. 28:175-181 (1974).

<1581>
CHEMICAL NAME: Benzoic acid, 5-(2,4-dichlorophenoxy)-2-nitro-, methyl ester
CHEMICAL COMMON NAME: Bifenox
PLANT: Junglerice (ECHINOCHLOA COLONUM); Spangletop, bearded, (LEPTOCHLOA FASCICULARIS); Nutsedge, yellow (CYPERUS ESCULENTUS); Rice (ORYZA SATIVA); Dayflower, spreading (COMMELINA DIFFUSA); Ammannia, purple (AMMANNIA COCCINEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Flatsedge, rice field (CYPERUS IRIA); Arrowhead (SAGGITARIA sp.)
EXPERIMENTAL DOSE: 2.24 and 3.36 kg/ha
APPLICATION METHODS: Preemergence spray; 9.8 l./ha at 1.23 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; 4 locations in Texas; ricefield flooding (when applicable) after treatment; soil--Edna clay loam, Edna sandy loam, and Katy sandy loam
EFFECTS: Moderate to effective control of junglerice, spangletop, nutsedge, and flatsedge with little or no control of remaining weeds and slight damage to rice
COMMENTS: IMC 3950 either preemergence or early post as a tank mixture with propanil controlled bearded

<1581> CONT.
sprangletop and junglerice, chlorpropham plus propanil showed promise for control of bearded sprangletop; oxadiazon and bifenox controlled bearded sprangletop as preemergence treatments; bifenox plus oxadiazon appeared to be best tank mix for control of several species
REFERENCE: Palmer, R.D. and C.W. Helpert, "Rice Weed Control in the Western Belt of Texas," Proc. S. Weed Sci. Soc. 27:127-135 (1974).

<1582>
CHEMICAL NAME: Benzoic acid, 6-amino-2,5-dichloro-
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5 and 1.0 ppm
APPLICATION METHODS: Pre and postemergence treatment
EXPERIMENTAL CONDITIONS: Seeds planted in plastic pots containing vermiculite; pots then immersed in 800 cc Hoagland's solution containing test compound til saturated, re-immersed periodically; after crookstage of development, plants immersed and remained for duration of experiment; average height and weight of untreated soybean plants determined 20 days after planting
EFFECTS: Severe formative effects of primary and first trifoliate leaves at 1.0 ppm, moderate effects at 0.5 ppm; 50% height reduction at 3.1 ppm (ED50); slight root stunting at 1.0 ppm
COMMENTS: ED50 dosages determined from logarithmic plot
REFERENCE: Sutherland, M.L., S.R. McLane, R.D. Hart, and H.L. Raman, "The Response of Soybeans to Several Substituted Benzoic Acids," Hormolog 3(1):5-7 (1961).

<1583>
CHEMICAL NAME: Benzonitrile-N-oxide, 2,6-dichloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: 10(-4) M extremely phytotoxic to all species; 10(-5) M extremely toxic to clover, moderately toxic to alfalfa, ryegrass, pigweed, and tomatoes, minor toxicity to mustard; minor or no phytotoxicity at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1584>
CHEMICAL NAME: Benzonitrile, 2-amino-6-chloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Extremely phytotoxic to tomatoes at 10(-4) M, strongly toxic to pigweed, moderately toxic to clover and alfalfa and minor toxicity to ryegrass and mustard; other concentrations exhibited minor or no phytotoxicity
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1585>
CHEMICAL NAME: Benzonitrile, 2-bromo-6-chloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Extremely phytotoxic to all species at 10(-4) M, to all species except clover at 10(-5) M and to ryegrass and pigweed at 10(-6) M; strongly toxic to clover at 10(-5) and 10(-6) M; moderately toxic to alfalfa, mustard, and tomatoes at 10(-6) M
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1586>
<1586>
CHEMICAL NAME: Benzonitrile, 2-chloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Extremely phytotoxic to pigweed at 10(-4) M, strongly toxic to clover, and moderately toxic to alfalfa, ryegrass, mustard and tomatoes; moderate toxicity to clover at 10(-5) and 10(-6) M; minor, or no toxicity to all plant/concentration associations not mentioned
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1587>
CHEMICAL NAME: Benzonitrile, 2-chloro-6-methyl-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Extremely phytotoxic to all species at 10(-4) M, to clover and pigweed at 10(-5) M; strongly toxic to ryegrass and tomatoes at 10(-5) M and to clover at 10(-6) M; moderately toxic to alfalfa at 10(-5) M
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1588>
CHEMICAL NAME: Benzonitrile, 2-chloro-6-nitro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Moderate toxicity to pigweed and tomatoes at 10(-4) M; minor or no toxicity to all plants at other concentrations and to species not named to 10(-4) M
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1589>
CHEMICAL NAME: Benzonitrile, 2,3-dichloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Strong phytotoxicity to redroot pigweed at 10(-4) M concentration, moderate toxicity to clover, ryegrass, and tomatoes; minor or no phytotoxicity to other species and to those mentioned at concentrations less than 10(-4) M
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1590>
CHEMICAL NAME: Benzonitrile, 2,3,4-trichloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications;

<1590> CONT.
controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Extremely phytotoxic to all species at 10(-4) and 10(-5) M; strongly phytotoxic to ryegrass at 10(-6) M; moderately toxic to pigweed, mustard, alfalfa and tomatoes at 10(-6) M; all concentrations showed some phytotoxicity to all plants
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1591>
CHEMICAL NAME: Benzonitrile, 2,3,5-trichloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Extremely phototoxic to all species at 10(-4) and 10(-5) M and to ryegrass at 10(-6) M; moderately toxic to pigweed, tomatoes, and alfalfa at 10(-6) M
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1592>
CHEMICAL NAME: Benzonitrile, 2,3,6-trichloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Moderately toxic to clover, pigweed and tomatoes at 10(-4) M, minor toxicity to alfalfa, ryegrass and mustard; minor or no phytotoxicity at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1593>
CHEMICAL NAME: Benzonitrile, 2,4-dichloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Moderate phytotoxicity to ryegrass at 10(-4) M, minor toxicity to other species; minor or no toxicity to all species at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1594>
CHEMICAL NAME: Benzonitrile, 2,4,6-trichloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Extremely phytotoxic to all plants except mustard at 10(-4) M, moderately toxic to mustard; strongly phytotoxic to clover and ryegrass at 10(-5) M and extremely toxic to pigweed; moderately toxic to clover at 10(-6) M

<1594>
<1594> CONT.
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1595>
CHEMICAL NAME: Benzonitrile, 2,6-dibromo-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Extremely phytotoxic to all species at 10(-4) and 10(-5) M and to ryegrass and pigweed at 10(-6) M; strongly phytotoxic to clover and tomatoes at 10(-6) M, moderately toxic to alfalfa and mustard; minor phytotoxicity to all species at 10(-7) M
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1596>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Quackgrass (AGROPYRON REPENS); Hydrangea (HYDRANGEA sp.); Euonymous, sarcoxie (EUONYMUS RADICANS); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Crabgrass, large (DIGITARIA SANGUINALIS); Horseweed (ERIGERON CANADENSIS); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Chickweed, common (STELLARIA MEDIA); Dandelion, common (TARAXACUM OFFICINALE) ; Cinquefoil (POTENTILLA sp.)
EXPERIMENTAL DOSE: 6 lb/A
APPLICATION METHODS: Formulation -- 4% G; granules applied with auger-feed applicator calibrated for each treatment; preplanting application
EXPERIMENTAL CONDITIONS: Sandy loam soil; 6x10 ft plots; hydrangea, sarcoxie euonymus, and Chrysanthemum plants placed in each plot at 1, 7 and 14 days after herbicide treatment
EFFECTS: December application on soil surface gave lasting control of quackgrass and other weeds; chrysanthemums were killed
COMMENTS: Author notes that woody ornamentals provide little competition to herbaceous weeds for light, mositure, and nutrients
REFERENCE: Ahrens, J.F., "Preplant Herbicides for Control of Quackgrass in Ornamentals," Proc. Northeast. Weed Sci. Soc. 28:372-378(1974).

<1597>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Quackgrass (AGROPYRON REPENS); Nutsedge, yellow (CYPERUS ESCULENTUS); Lamb's-quarters (CHENOPODIUM ALBUM); Yew, upright (TAXUS CUSPIDATA); Chickweed, common (STELLARIA MEDIA); Horseweed (ERIGERON CANADENSIS); Vetch, bird (VICIA CRACCA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Carpetweed (MOLLUGO VERTICILLATA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 6 lb/A
APPLICATION METHODS: Formulation -- 4% G; granules applied with auger-feed machine calibrated for each treatment
EXPERIMENTAL CONDITIONS: Yews (5 years old) spaced at 2 foot intervals in rows 3 feet apart; herbicides applied on December 1, 1970 and again on December 9, 1971; soil was moist and 39 degrees F at 3 inch depth at 1970 treatment, air temperature was 45 degrees F; December 1971 application-- 1 to 3 inches snow on ground and air temperature 39 degrees F.
EFFECTS: Quackgrass -- 6 lb/A gave good control; nutsedge -- good control both growing seasons, more effective than other herbicides first growing season; bird vetch -- invasion into yews reduced; some control of other weeds; no appreciable injury to yews
COMMENTS: Excessive rainfall second growing season accelerated herbicide leaching; results of weed control with combinations of herbicides reported
REFERENCE: Ahrens, J.F., "Fall Applications of Herbicides for Control of Quackgrass and Yellow Nutsedge in TAXUS CUSPIDATA CAPITATA," Proc. Northeast. Weed Sci. Soc. 28:379-385(1974).

<1598>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Cotoneaster (COTONEASTER sp.); Euonymus (EUONYMUS FORTUNEI); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Millet, foxtail (SETARIA ITALICA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA)
EXPERIMENTAL DOSE: 0.44 g/m2
APPLICATION METHODS: Treatments replicated 5 times
EXPERIMENTAL CONDITIONS: Soil -- 1 sphagnum peat: 1 horticultural grade perlite; crop plants cotoneaster and euonymus placed in plastic 1 gal pots, 20 seeds of each weed species planted in each pot; activated carbon placed in soil to protect crop roots and on surface to absorb herbicide
EFFECTS: Good weed control -- better than other single herbicides tested; dichlobenil plus trifluralin also

<1598> CONT.
gave good weed control; without activated carbon protection, crop growth reduced; with activated carbon, growth equal to control
COMMENTS: Herbicides used safely for containerized nursery stock grown in porous media when activated carbon mixed in soil medium and when herbicide is incorporated into activated carbon-free layer on surface of soil; activated carbon absorbs herbicide before injury to crop roots occur
REFERENCE: Carpenter, P.L., "Chemical Weed Control in Container-grown Nursery Stock," Hortscience 8(5):385-386 (1973).

<1599>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Broadleaf weeds; Grasses; Bermudagrass, common (CYNODON DACTYLON); Peach (PRUNUS PERSICA);
EXPERIMENTAL DOSE: 4.48 and 6.72 kg/ha
APPLICATION METHODS: Postemergence broadcast; surface application and also incorporated (5 cm depth); 4% G formulation
EXPERIMENTAL CONDITIONS: Field study; time period--1966 to 1968; soil residues studied
EFFECTS: Effective control of all weeds except bermudagrass with no adverse effect on peach tree growth; incorporation improved effectiveness
COMMENTS: Average monthly ratings showed significant increases in bermudagrass control with incorporation of all three herbicides; tree-trunk diameters in incorporated dichlobenil plots greater than those in surface-applied dichlobenil plots; incorporation in soil reduced loss of dichlobenil, terbacil, and DP-733.
REFERENCE: Skroch, W.A., T.J. Sheets, and J.W. Smith, "Herbicide Effectiveness, Soil Residues, and Phytotoxicity to Peach Trees," Weed Sci. 19(3):257-260 (1971).

<1600>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate overall weed control and control of barnyard grass but effective control of purslane and pigweed with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chlorcxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<1601>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlorobenil
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-4) M, 10(-5) M, 10(-6) M, and 10(-7) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete or near complete control of shoot emergence at 10(-4), 10(-5), and 10(-6) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1602>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Apple (PYRUS MALUS); Fescue, creeping red (FESTUCA RUBRA); Quackgrass (AGROPYRON REPENS); Bluegrass, annual (POA ANNUA); Orchard grass (DACTYLIS GLOMERATA); Crabgrass, large (DIGITARIA SANGUINALIS); Milkweed (ASCLEPIAS SYRIACA); Goldenrod (SOLIDAGO CANADENSIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 6 lb/A
APPLICATION METHODS: 4% G applied during November
EXPERIMENTAL CONDITIONS: 2 apple orchards--trees 3 years old at start of experiment; 1 row = 1 herbicide treatment 36 sq. ft. area treated around each free; weed control and apple tree injury ratings made June 20 and September 20 for 10 consecutive years
EFFECTS: Orchard 1--94% broadleaf and 97% grass control on June 20, 90% broadleaf and 92% grass control on September 20; orchard 2--99% broadleaf and 98% grass control on June 20, 96% broadleaf and 97% grass control on September 20; no injury to apple trees
COMMENTS: Results reported represent 10 year summary; chemical weed control practical and safe for apple orchards; dichlobenil gave longest effective control
REFERENCE: Langer, C.A., W.H. Smith, and G. Gebe, "Ten Consecutive Years of Weed Control in Each of Two Separate Apple Orchards in New Hampshire," Proc. Northeast. Weed Sci. Soc. 27:257-261 (1973).

<1603>
<1603>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Prince of Wales feather (AMARANTHUS POWELLII); Wireweed (POLYGONUM AVICULARE); Cress, pepper (LEPIDIUM HYSSOPIFOLUM); Lettuce, prickly (LACTUCA SCARIOLA); Lamb's-tongue (PLANTAGO LANCEOLATA); Couchgrass (CYNODON DACTYLON); Prairie grass (BROMUS sp.); Love-grass (ERAGROSTIS sp.); Lamb's-quarters (CHENOPODIUM ALBUM); Sowthistle, annual (SONCHUS OLERACEUS); Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 4.5 and 9.0 kg/ha
APPLICATION METHODS: Late August treatments applied with knapsack sprayer at 30 psi pressure and calibrated to deliver 600 l/ha
EXPERIMENTAL CONDITIONS: 1 year old peach trees; 4 replicates, 2 trees in each plot; sandy clay loam soil; herbicides applied late August for 2 consecutive years; assessments made in December and March of both growing seasons and also in November during the second growing season
EFFECTS: Grass and broadleaf weeds suppressed; greater butt increments of peach trees than control; no injury to peach trees
COMMENTS: Plots with 4.5 kg/ha applied required treatment with paraquat and diquat in November of second growing season to maintain weed control--short residual activity
REFERENCE: Koffmann, W. and J. Kaldor, "Chemical Weed Control in Young Peach Trees," Aust. J. Exp. Agric. Anim. Husb. 15:566-569 (1975).

<1604>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat, and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--50% or greater inhibition in sorghum, oat, and cucumber at 1 and 10 ppm; shoot--50% or greater inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<1605>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Weeds; Pine, loblolly (PINUS TAEDA)
EXPERIMENTAL DOSE: 5 lb/A
APPLICATION METHODS: Preemergence, sprayed over newly planted pine seedlings at 40 psi and 20 gpa
EXPERIMENTAL CONDITIONS: Field trials, Oklahoma; randomized plots, 10 X 100 ft; sandy clay loam soil; 8 wk evaluations
EFFECTS: 80% weed control; relatively non-toxic to pines
COMMENTS: No specific phytotoxic information on pines
REFERENCE: O'Loughlin, T.C., L.R. Nelson, J.D. Walstad, J.H. Breland, and J.E. Voeller, "Velpar and Other Preemergence Herbicides for Use in Establishment of Loblolly Pine Plantations," Proc. South. Weed Sci. Soc. 29:262-268 (1976).

<1606>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Apple (PYRUS MALUS)
EXPERIMENTAL DOSE: 1.81 and 2.72 kg/A
APPLICATION METHODS: 4% granular treatments for 6 consecutive years at 3 timings: Oct. 29-Nov. 3 (early fall treatment), Nov 21-29 (late fall treatment) and Mar. 1-Apr. 3 (Spring treatment)
EXPERIMENTAL CONDITIONS: 6 consecutive years; Charlton sandy loam; all trees including checks sprayed annually with paraquat to eliminate variable of differential weed control; growth measurements and foliar phytotoxicity recorded
EFFECTS: Marginal leaf yellowing first observed in October of year 2; 50% of trees showed similar injury the third year and 100% each succeeding year; no cumulative effect on growth, or yield
COMMENTS: Occasional relationship between marginal leaf yellowing severity and tree growth and yield; authors note that phytotoxicity from dichlobenil is frequently more severe than what they observed--suggestion that commercial plantings are overdosed
REFERENCE: Lord, W.J., R.A. Damon, Jr., and D.W. Greene, "Response of 'McIntosh' Apple Trees to Annual Applications of 2,6-Dichlorobenzonitrile (Dichlobenil)," J. Amer. Soc. Hort. Sci. 98(6):596-598 (1973).

<1607>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Peach (PRUNUS PERSICA); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Witchweed (STRIGA LUTEA)
EXPERIMENTAL DOSE: 6.72 and 13.44 kg/ha
APPLICATION METHODS: Treatments applied to mulched and non-mulched soil
EXPERIMENTAL CONDITIONS: 'Richaven' peach trees planted in Situate sandy loam; 6 experiments--(1) hay mulch only at planting; (2) annual cultivation in May and July; (3) 4% granular dichlobenil at 6.72 kg/ha on non-mulched soil; (4) dichlobenil at 13.44 kg/ha on non-mulched soil, (5) dichlobenil at 6.72 kg/ha applied on mulch and (6) dichlobenil at 13.44 kg/ha applied on mulch; 5 year experiments; dichlobenil

<1607> CONT.
applied mid-November each year
EFFECTS: Experiment 1--very little weed control; experiment 2--excellent weed control first year, less the years after; experiment 3--moderate weed control 3 years, poor control last 2 years, leaf injury (high of 78% of all leaves third year, low of 15% fourth year); experiment 4--good weed control first 3 years, leaf injury (94% second and third years, 97% fifth year); experiment 5--moderate weed control first 3 years, less the next 2 years, leaf injury (0% first year, 47% third year and 30% fifth year); experiment 6--excellent weed control first 3 years, moderate control next 2 years, leaf injury (0% first year, 81% third year, 29% fourth year and 91% fifth year)
COMMENTS: Recommended rate of dichlobenil for peach trees, 6.72 kg/ha; dichlobenil in soil not reduced by mulch
REFERENCE: Lord, W.J. and R.A. Damon, "Influence of Mulch on Residue Accumulation and on Injury to 'Richaven' Peach Trees from 2,6-Dichlorobenzonitrile (Dichlobenil)," Hortscience 9(5):449-450 (1974).

<1608>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Extremely phytotoxic to all species at 10(-4) and 10(-5) M and to ryegrass also at 10(-6) M; moderate phytotoxicity to pigweed, tomatoes, and alfalfa at 10(-6) M
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1609>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlorobenil
PLANT: Broadleaf weeds; Grasses; Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 4.0 lb/A; G
APPLICATION METHODS: Preemergence broadcast with spreader
EXPERIMENTAL CONDITIONS: Field study; soils--Lloyd clay loam and Facerville fine sandy loam (two GA locations); time period--1968 and 1969; trees in center of 16 ft treatment swaths with 8 ft of untreated sod between swaths
EFFECTS: Effective control of weeds with no adverse effect to peach trees
COMMENTS: Several herbicide methods gave season-long weed control without detriment to growth or yield of peach trees
REFERENCE: Daniell, J.W. and W.S. Hardcastle, "Response of Peach Trees to Herbicide and Mechanical Weed Control," Weed Sci. 20(2):133-136 (1972).

<1610>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlorobenil
PLANT: Broadleaf weeds; Grasses; Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Postemergence spray; 35 gal/A; dichlorobenil was a 4% G formulation
EXPERIMENTAL CONDITIONS: Field study; orchards in two locations; three varieties of apples; time period--1963 to 1972
EFFECTS: Effective control of all weeds with no adverse effect on apple
COMMENTS: All chemicals effective, but combinations gave more complete control of all weeds; several weeds gave slight problems in spots once the main weed competition killed out
REFERENCE: Langer, C.A., W.H. Smith, and G. Gebe, "Ten Consecutive Years of Weed Control in Each of Two Separate Apple Orchards in New Hampshire," Proc. Northeast. Weed Sci. Soc. 27:257-261 (1973).

<1611>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlorobenil
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 6.0 to 12.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: Effective weed control with damage of cotton
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<1612>
<1612>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts and mung bean hypocotyls; evaluation time--up to 3 hr
EFFECTS: Little or no inhibition of photoreduction of oxidative phosphorylation
COMMENTS: In chloroplasts, hydroxylated derivatives inhibited both photoreduction and coupled photophosphorylation with water as electron donor and with ferricyanide as oxidant, and cyclic photophosphorylation with phenazine methosulfate as electron mediator under an argon gas phase; in mitochondria, phenolic derivatives acted as uncouplers of oxidative phosphorylation as evidenced by stimulation of ADP-limited respiration, circumvention of oligomycin-inhibited non-ADP-limited respiration, and induction of ATPase activity
REFERENCE: Moreland, D.E., G.G. Hussey, and F.S. Farmer, "Comparative Effects of Dichlobenil and Its Phenolic Alteration Products on Photo- and Oxidative Phosphorylation," Pest. Biochem. Phys. 4(3):356-364 (1974).

<1613>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Casoron
PLANT: Bluegrass, annual (POA ANNUA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preplant solution soak
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Puyallup fine sandy loam; pH--5.8; temperature--approx 60 F
EFFECTS: Effective bluegrass control at higher rate but phytotoxic to bentgrass
COMMENTS: Dacthal, betasan, dipropalin, trifluralin, and enide significantly controlled annual bluegrass for periods of 9 to 12 weeks; dacthal and betasan completely nonphytotoxic to mature turf
REFERENCE: Goss, R.L., "Preemergence Control of Annual Bluegrass (POA ANNUA L.)," J. Agron. 56(1):479-481 (1964).

<1614>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlorobenil
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate weed control with no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<1615>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Willow (SALIX sp.); Grape (VITIS VINIFERA); Eucalyptus, red gum (EUCALYPTUS CAMALDULENSIS)
EXPERIMENTAL DOSE: 10 and 100 mg/l.
APPLICATION METHODS: Exposed plant roots placed in 1.0 liter herbicide solution; 1% EC and 50% WP formulations
EXPERIMENTAL CONDITIONS: Pot studies; plastic pot (holes in bottom) with plant placed on top of another pot containing soil; after root growth through holes into second pot, plants carefully removed and placed on top of pot containing herbicide solution; 1-hr herbicide exposure
EFFECTS: Willow--1% EC killed roots with systemic foliage injury at 10 to 100 mg/l.; other plants--50% WP killed roots at 100 mg/l. with no systemic foliage injury
COMMENTS: Good candidate for further study; surfactant addition and lowering of temperatures during root exposure and root washing after exposure reduced toxicity
REFERENCE: Ahrens, J.F., O.A. Leonard, and N.R. Townley, "Chemical Control of Tree Roots in Sewer Lines," J. Water Pollut. Control Fed. 42(9):1643-1655 (1970).

<1616>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Casaron
PLANT: Plants; Pepper, pimento
EXPERIMENTAL DOSE: 1, 2, and 5 lb/A
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Weed control effectiveness not stated but brittleness and stand reduction of pimento
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<1617>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: 2,5-DBN
PLANT: Oat (AVENA SATIVA); Ryegrass, perennial (LOLIUM PERENNE); Corn (ZEA MAYS); Pea, sweet (PISUM SATIVUM); Beet, sugar (BETA VULGARIS); Linseed (LINUM USITATISSIMUM); Kale (BRASSICA OLERACEA); Mustard, white (BRASSICA ALBA)
EXPERIMENTAL DOSE: 1.0 to 10.0 lb/A
APPLICATION METHODS: Spray to soil (preemergence) and foliage and solution drench application (postemergence)
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Less than 1.0 lb/A applied to soil pre-or postmergence generally caused 50% inhibition
COMMENTS: Highly phytotoxic when applied as soil drench or pre-emergence spray in greenhouse; measurement of crop and weed responses in field, accompanied by quantitative assessment of chemical residues in soil, indicated that persistence following surface application short under both tropical and temperate (winter) conditions
REFERENCE: Barnsley, G.E. and P.H. Rosher, "The Relationship Between the Herbicidal Effect of 2,6-Dichlorobenzonitrile and Its Persistence in the Soil," Weed Res. 1(2):147-158 (1961).

<1618>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Bindweed, field (CONVOLVULUS ARVENSIS); Grape (VITIS sp.)
EXPERIMENTAL DOSE: 1.5, 3.0, 8.0, 12.0, 13.0, and 18.0 lb/A
APPLICATION METHODS: 4% G--winter incorporated; 50% WP--spray application 3 to 4 in. under soil surface
EXPERIMENTAL CONDITIONS: Experiment 1 -- 4% G application; experiment 2 -- 50% WP application
EFFECTS: Experiment 1--acceptable bindweed control at 12 lb/A but grape leaf burn evident 9 months after second consecutive yearly treatment; experiment 2--no commercially acceptable bindweed control at 1.5 and 3.0 lb/A, season-long bindweed control with rates above 3.0 lb/A but grape leaf injury also evident
COMMENTS: Application method of underground spraying shows promise; effects of herbicide mixtures also noted
REFERENCE: Hamilton, W.D., A.H. Lange, and C.L. Elmore, "Field Bindweed Control in Vineyards," Calif. Agric. 25(9):9-10 (1971).

<1619>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlorobenil
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: At 20.0 lb/A; effective control for prolonged period
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1620>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlorobenil
PLANT: Broadleaf weeds; Grasses; Azalea (RHODENDRON OBTUSUM); Azalea (RHODODENDRON INDICUM); Holly (ILEX CRENATA); Juniper (JUNIPERUS CHINENSIS); Privet, waxy (LIGUSTRUM ACIDUM)
EXPERIMENTAL DOSE: 4.4 and 13.4 kg/ha
APPLICATION METHODS: Incorporated on pine bark then applied as mulch to rooted cuttings; mulch depth--1.27 cm
EXPERIMENTAL CONDITIONS: Shade house; nursery container culture; time period--1970 and 1971
EFFECTS: Effective weed control at both rates but significant damage to ornamentals especially at higher rate
COMMENTS: All impregnated mulches except EPTC and diphenamid provided adequate long-season broadleaf weed control; long-season grass weed control acceptable with all herbicide-impregnated mulches except chlorpropham, chlorpropham plus PPG-124, and diphenamid; plant injury appeared on all five species of nursery stock with dichlobenil
REFERENCE: Fretz, T.A., "Herbicide-Impregnated Mulches for Weed Control in Container Nursery Stock," Sci. Hort. 1:165-170 (1973).

<1621>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-
CHEMICAL COMMON NAME: Dichlobenil
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 5.86 to 4.73 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<1622>
<1622>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-3-hydroxy-
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 62 to 800 micro M
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts and mung bean hypocotyls; evaluation time--up to 3 hr
EFFECTS: 50% inhibition of several photoreactions
COMMENTS: In chloroplasts, hydroxylated derivatives inhibited both photoreduction and coupled photophosphorylation with water as electron donor and with ferricyanide as oxidant, and cyclic photophosphorylation with phenazine methosulfate as electron mediator under an argon gas phase; in mitochondria, phenolic derivatives acted as uncouplers of oxidative phosphorylation as evidenced by stimulation of ADP-limited respiration, circumvention of oligomycin-inhibited non-ADP-limited respiration, and induction of ATPase activity
REFERENCE: Moreland, D.E., G.G. Hussey, and F.S. Farmer, "Comparative Effects of Dichlobenil and Its Phenolic Alteration Products on Photo- and Oxidative Phosphorylation," Pest. Biochem. Phys. 4(3):356-364 (1974).

<1623>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-4-amino-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Moderate toxicity to pigweed at 10(-4) M, minor toxicity to other species; minor or no toxicity to all plants at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1624>
CHEMICAL NAME: Benzonitrile, 2,6-dichloro-4-hydroxy-
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 18 to 1100 micro M
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts and mung bean hypocotyls; evaluation time--up to 3 hr
EFFECTS: 50% inhibition of several photoreactions
COMMENTS: In chloroplasts, hydroxylated derivatives inhibited both photoreduction and coupled photophosphorylation with water as electron donor and with ferricyanide as oxidant, and cyclic photophosphorylation with phenazine methosulfate as electron mediator under an argon gas phase; in mitochondria, phenolic derivatives acted as uncouplers of oxidative phosphorylation as evidenced by stimulation of ADP-limited respiration, circumvention of oligomycin-inhibited non-ADP-limited respiration, and induction of ATPase activity
REFERENCE: Moreland, D.E., G.G. Hussey, and F.S. Farmer, "Comparative Effects of Dichlobenil and Its Phenolic Alteration Products on Photo- and Oxidative Phosphorylation," Pest. Biochem. Phys. 4(3):356-364 (1974).

<1625>
CHEMICAL NAME: Benzonitrile, 2,6-dimethyl-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Minor toxicity to all plants at 10(-4) M, mustard showed least injury
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1626>
CHEMICAL NAME: Benzonitrile, 3-chloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6) and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: 10(-4) M concentration strongly phytotoxic to clover, minor toxicity to other plants; other concentrations show minor or no phytotoxicity to other plants

<1626> CONT.
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1627>
CHEMICAL NAME: Benzonitrile, 3,4-dichloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Moderate phytoxicity to clover and alfalfa at 10(-4) M, minor toxicity to other plants; minor or no toxicity to all plants at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1628>
CHEMICAL NAME: Benzonitrile, 3,4,5-trichloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: Moderately toxic to clover at 10(-4) M, minor toxicity to other species; minor or no phytotoxicity to all plants at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1629>
CHEMICAL NAME: Benzonitrile, 3,5-dibromo-4-hydroxy-
CHEMICAL COMMON NAME: Bromoxynil
PLANT: Capewood (ARCTOTHECA CALENDULA); Oat (AVENA SATIVA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.28 and 0.56 kg/ha
APPLICATION METHODS: Postemergence spray; 112 l./ha
EXPERIMENTAL CONDITIONS: Field study; time period-- 1966 to 1970; 5 locations in Australia
EFFECTS: Effective control of capeweed at 0.56 kg/ha with no adverse effect on crop yields
COMMENTS: Most satisfactory herbicides tested for control of capeweed were bromoxynil, linuron, diquat and prometryne; in one year tested, methabenzthiazuron effective
REFERENCE: Reeves, T.G. and J.M. Lumb, "Selective Chemical Control of Capeweed in Wheat," Aust. J. Exp. Agric. Anim. Husb. 12:60-64 (1972).

<1630>
CHEMICAL NAME: Benzonitrile, 3,5-dibromo-4-hydroxy-
CHEMICAL COMMON NAME: Bromoxynil
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Plants
EXPERIMENTAL DOSE: 0.25, 0.38, 0.50, and 0.63 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays
EXPERIMENTAL CONDITIONS: Field studies; time period--1967 to 1969; soils--Ramona sandy loam and Greenfield
EFFECTS: In preemergence application, slight injury to asparagus at all rates; in postemergence application, moderate control of weeds at highest rates
COMMENTS: Chemicals which killed or severely damaged asparagus include monuron, diuron, simazine, sinbar, sindone-B, treflan, tenoran, and CIPC; vegiben marginal; of herbicides tested in these trials for pre-emergence weed control in direct-seeded asparagus, balan, bensulide, and brominal offer most promising results
REFERENCE: Whiting, F.L., F.H. Takatori, and J.M. Lyons, "Weed Control in Asparagus," Calif. Agric. 25(1):4-5 (1971).

<1631>
CHEMICAL NAME: Benzonitrile, 3,5-dibromo-4-hydroxy-
CHEMICAL COMMON NAME: Bromoxynil
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C

<1631>
<1631> CONT.
(night); evaluation times--14 and 21 days
EFFECTS: No effect observed.
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1632>
CHEMICAL NAME: Benzonitrile, 3,5-dibromo-4-hydroxy-
CHEMICAL COMMON NAME: Bromoxynil
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat, and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in sorghum, oat, and cucumber at 1 ppm, less than 50% inhibition in sorghum and cucumber and 50% or greater in oat at 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 ppm, less than 50% in sorghum and 50% or greater in oat at 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<1633>
CHEMICAL NAME: Benzonitrile, 3,5-dibromo-4-hydroxy-
CHEMICAL COMMON NAME: Bromoxynil
PLANT: Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.28 to 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 168 l/ha
EXPERIMENTAL CONDITIONS: Field study; weed-free plots; 4 locations in Australia; time period--1966 to 1972
EFFECTS: Reduced yield
COMMENTS: All chemicals lowered grain yields to some extent, but variation between chemicals greater for wheat than for barley; in both crops, methabenzthiazuron safest chemical causing only small yield losses at rates up to 2.25 kg/ha
REFERENCE: Elliott, B.R., J.M. Lumb, T.G. Reeves, and T.E. Telford, "Yield Losses in Weed-Free Wheat and Barley Due to Post-Emergence Herbicides", Weed Res. 15(2):107-111 (1975).

<1634>
CHEMICAL NAME: Benzonitrile, 3,5-dibromo-4-hydroxy-
CHEMICAL COMMON NAME: Bromoxynil
PLANT: Periwinkle, common (VINCA MINOR); St. John's-wort (HYPERICUM CALYCINUM); (DELASPERMA ALBA); (GAZANIA SPLENDENS); Ivy (HEDERA CANARIENSIS); Ivy, English (HEDERA HELIX); Iceplant (CARPOBROTUS EDULE); Stonecrop (SEDUM BREVIFOLIUM); Bugleweed (AJUGA REPENS)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence application using a knapsack sprayer at a pressure of 30 psi
EXPERIMENTAL CONDITIONS: Field experiments; July 26 applications--injury evaluations made September 1, September 30 and October 22 of the same year; each treatment replicated 4 times
EFFECTS: V. MINOR--severe foliar injury, regrowth unaffected; H. CALYCINUM--burned foliage, complete recovery; D. ALBA--moderate initial injury; G. SPLENDENS--no injury; H. CANARIENSIS--slight leaf burn; H. HELIX--no injury; C. EDULE--foliage necrosis; S. BREVIFOLIUM--flower stalks present at treatment, killed; A. REPENS--no injury
REFERENCE: Elmore, C.L., W.D. Hamilton, E. Johnson, and T. Kretchun, "Ground Cover Species Tolerance to Herbicide Applications," Calif. Agric. 26(3):3-4 (1972).

<1635>
CHEMICAL NAME: Benzonitrile, 3,5-dibromo-4-hydroxy-
CHEMICAL COMMON NAME: Bromoxynil
PLANT: Clover, red (TRIFOLIUM PRATENSE)
EXPERIMENTAL DOSE: 0.28, 0.42 and 0.56 kg/ha
APPLICATION METHODS: Isooctyl ester; postemergence application as spray in 140 l./ha water
EXPERIMENTAL CONDITIONS: Albright-Landry silt loam to clay loam soils; 2 stage applications for 2 years--beginning of spring growth (stage 1) and when crop was 7.5--10 cm high (stage 2); split plot design with 6 replications; seed yields determined by harvesting strips from herbicide subplots
EFFECTS: 1973--0.28 kg/ha caused no delay in flowering at stage 1 and a slight delay at stage 2, 0.42 kg/ha caused very slight delay at stage 1 and stage 2, no significant effect on seed yield; 1974--no significant effect on flowering and seed yield; no significant effect on germination either year
COMMENTS: 1973 growing season had below normal precipitation and early frost and snow that reduced growth vigor; precipitation maintained growth vigor during 1974 growing season
REFERENCE: Darwent, A.L. and P. Pankiw, "Effects of Several Herbicides on Red Clover Seed Production," Can. J. Plant Sci. 56:413-415 (1976).

<1636>
CHEMICAL NAME: Benzonitrile, 3,5-dibromo-4-hydroxy-
CHEMICAL COMMON NAME: Bromoxynil
PLANT: Clover, ladino (TRIFOLIUM REPENS); Crownvetch (COPONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 0.6 kg/ha
APPLICATION METHODS: Postemergence September application
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Excessive injury to clover and crownvetch; effective weed control
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<1637>
CHEMICAL NAME: Benzonitrile, 3,5-dibromo-4-hydroxy-
CHEMICAL COMMON NAME: Bromoxynil
PLANT: Soybean (GLYCINE MAX); Jimsomweed (DATURA STRAMONIUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 0.14, 0.28, and 1.12 kg/ha
APPLICATION METHODS: Postemergence and postdirected sprays at 30 gpa; postdirected treatment to lower 1/3 of soybean plant in 30 cm band
EXPERIMENTAL CONDITIONS: Mattapex silt loam; randomized complete block design with 4 replications; jimsonweed 25 to 30 cm tall at application
EFFECTS: Postemergence--good jimsonweed control at 1.12 and 0.14 kg/ha, good pigweed control at 1.12 kg/ha but poor control at 0.14 kg/ha, half of soybean leaves became necrotic and defoliate with subsequent regrowth from 1.12 kg/ha being reduced; postdirected--unacceptable jimsonweed control, good pigweed control except at 0.28 kg/ha applied late July which gave fair control, no reported soybean injury
REFERENCE: Parochetti, J.V., "Postemergence and Postdirected Broadleaved Weed Control for Soybeans," Proc. Northeast. Weed Sci. Soc. 27:75-79 (1973).

<1638>
CHEMICAL NAME: Benzonitrile, 4-chloro-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6) and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: 10(-4) M concentration strongly phytotoxic to clover, minor toxicity to other plants; 10(-5) M concentration moderately phytotoxic to clover; other concentrations show minor or no toxicity to other plants
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<1639>
CHEMICAL NAME: Benzonitrile, 4-hydroxy-3,5-diiodo
CHEMICAL COMMON NAME: Ioxynil
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Moderate control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1640>
CHEMICAL NAME: Benzonitrile, 4-hydroxy-3,5-diiodo-
CHEMICAL COMMON NAME: Ioxynil
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 4.9 x 10(-6)M
APPLICATION METHODS: Immersion of leaves in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--20 C; light intensity--2500 lux; evaluation times-- 0 to 50 hr; CO(2) fixation measured as well as P(32) uptake
EFFECTS: Inhibition of photosynthesis
COMMENTS: Prometryne inhibited photosynthesis after 12-30 hr and oxynil after 50 hr; results, compared with those on P(32) incorporation into nucleic acid, where rate of incorporation almost immediately affected, suggest that herbicides do not interfere primarily with photosynthetic reaction cycle
REFERENCE: Beruter, J. and A.T. Temperli, "Influence of Prometryne and Ioxynil on Photosynthesis and Nucleic Acid Metabolism in Plants," Experientia 26(6):600-601 (1970).

<1641>
<1641>
CHEMICAL NAME: Benzonitrile, 4-hydroxy-3,5-diiodo-
CHEMICAL COMMON NAME: Ioxynil
PLANT: Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 1.0 to 8.0 pt/A
APPLICATION METHODS: Cane set germination (sprouting)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--5 wk
EFFECTS: No adverse effect on cane set germination
COMMENTS: Karmex-2,4-D ester appeared to cause depression in cane yields but compensated for this by an improvement in juice quality; overall improvement in cane yields and juice quality resulting from Gesapax-Actril-D treatment quite noticeable as it outyielded all others; only Daconate seemed to result in noticeable sugar yield depression primarily because of its adverse effect on juice quality; dalapon and gramoxone in combination with 2,4-D ester did not seriously affect yields
REFERENCE: Maddan, W.L. and E.M. Christie, "Weed Control at Monymusk," Jamaican Assoc. Sugar Tech. 33:76-82 (1972).

<1642>
CHEMICAL NAME: Benzonitrile, 4-hydroxy-3,5-diiodo-
CHEMICAL COMMON NAME: Ioxynil
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 4.9 X 10(-6) M
APPLICATION METHODS: Immersion of leaves in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--20 C; light intensity--2500 lux; evaluation times--0 to 50 hr; CO(2) fixation measured as well as P(32) uptake
EFFECTS: Inhibition of photosynthesis
COMMENTS: Prometryne inhibited photosynthesis after 12-30 hr and ioxynil after 50 hrs; results, compared with those on P(32) incorporation into nucleic acid, where rate of incorporation almost immediately affected, suggest that herbicides do not interfere primarily with photosynthetic reaction cycle.
REFERENCE: Beruter, J. and A.T. Temperli, "Influence of Prometryne and Ioxynil on Photosynthesis and Nucleic Acid Metabolism in Plants," Experientia 26(6):600-601 (1970).

<1643>
CHEMICAL NAME: Benzonitrile, 4-hydroxy-3,5-diiodo-
CHEMICAL COMMON NAME: Ioxynil
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 1x10(-8) to 1x10(-3) M
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; lettuce leaf chloroplasts
EFFECTS: Inhibition (50%) of all photoreactions and electron transport at concentrations ranging from 1 X 10(-8) to 1 X 10(-4) M
COMMENTS: Ioxynil very potent inhibitor of photoreduction and photophosphorylation when water was electron donor; like alkyl-hydroxy-quinoline N-oxides, it was more effective with ferricyanide than with NADP as electron acceptor, giving 50% inhibition at 7x10(-8) M
REFERENCE: Gromet-Elhanan, Z., "The Inhibition of Photoreactions of Chloroplasts by Ioxynil," Biochem. & Biophys. Res. Comm. 30(1):28-31 (1968).

<1644>
CHEMICAL NAME: Benzonitrile, 4-hydroxy-3,5-diiodo-
CHEMICAL COMMON NAME: Ioxynil
PLANT: Onion (ALLIUM CEPA); Leek (ALLIUM PORRUM); Plants
EXPERIMENTAL DOSE: 0.63 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil-sandy loam
EFFECTS: Moderate weed control with no adverse effect on onion or leek
COMMENTS: Bulb onions and leeks severely injured at early growth stages, but application at 2-leaf stage had no significant adverse effect; at this stage, salad onions for over-wintering injured, but slightly later application caused only transient injury; control of most weed species very good
REFERENCE: Roberts, H.A. and W. Bond, "Experiments With Methazole on Onions and Leeks," Proc. 11th. Br. Weed Cont. Conf. 1:185-189 (1972).

<1645>
CHEMICAL NAME: Benzothiazole
CHEMICAL COMMON NAME: Benzothiazole
PLANT: Cucumber (CUCUMIS SATIVUS); Barley (HORDEUM VULGARE); Bean, bush (PHASEOLUS HUMILIS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1x10(-5), 5x10(-5), 1x10(-4), 5x10(-4), 1x10(-3), 5x10(-3), and 1x10(-2) M
APPLICATION METHODS: Root growth tests--96-hr treatments at 25 C; morphological studies--test compound added to soil in 25 ml aqueous solution (tomato plants when tested received 50 ml)
EXPERIMENTAL CONDITIONS: Root growth tests--inhibition of cucumber roots and effect on dry weight or barley roots determined; morphological fsfs-- plants grown in 75 g vermiculite in plastic pots, observations on bean and tomato
EFFECTS: Root growth--50% root inhibition at 5x10(-4) M, approximately 60% decrease in barley dry weight at 1x10(-4) M; morphological changes--1x10(-2) m caused dry, dark-brown, sunken lesions on tomato stem and petioles with plant death in 10-14 days, no effect on bean leaves at 1x10(-2) M and 3x10(-3) M, adventitious roots observed on lower beanstem at 1x10(-2) M
COMMENTS: Barley weight study--essentially a study of conversion of endosperm to root tissue by young seedlings
REFERENCE: Klingensmith, M.J., "The Effect of Certain Benzazole Compounds on Plant Growth and Development," Am. J. Bot. 48:40-45 (1961).

<1646>
CHEMICAL NAME: Benzothiazole, mercapto-S-methyl-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 4x10(-4)M
APPLICATION METHODS: 96-hr treatment at 25 C
EXPERIMENTAL CONDITIONS: Primary root elongation inhibition determined
EFFECTS: 50% root growth inhibition
REFERENCE: Klingensmith, M.J., "The Effect of Certain Benzazole Compounds on Plant Growth and Development," Am. J. Bot. 48:40-45 (1961).

<1647>
CHEMICAL NAME: Benzothiazoleacetic acid, 4-chloro-2-oxo-3(2H)-
CHEMICAL COMMON NAME: Benazolin
PLANT: Mustard, wild (BRASSICA KABER); Mustard, black (BRASSICA NIGRA); Mustard, Chinese (BRASSICA JUNCEA); Mustard (BRASSICA CAMPESTRIS); Rape, target (BRASSICA NAPUS); Mustard, yellow (BRASSICA HIRTA); Radish (RAPHANUS SATIVUS); Crambe (CRAMBE ABYSSINICA)
EXPERIMENTAL DOSE: 0.56 and 0.84 kg/ha
APPLICATION METHODS: Postemergence spray; 102 l./ha at 35 psi; T-65015 nozzle tip
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of wild mustard (B. KABER) with varying degrees of damage to other crucifers
COMMENTS: Only wild mustard showed almost complete susceptibility to benazolin, although B. NIGRA plants severely damaged; other related genera and species responded in varying degrees from almost no visible reaction in B. HIRTA, B. NAPUS, and CRAMBE spp., through slight symptoms of leaf curl in B. CAMPESTRIS, to more pronounced effects in B. JUNCEA, B. CARINATA, and RAPHANUS SATIVUS; heavier rate of benazolin application resulted in greatest differentiation among species
REFERENCE: Salam, M.A. and R.K. Downey, "Selectivity of Benazolin in Cruciferae," Can. J. Plant Sci. 53:819-896 (1973).

<1648>
CHEMICAL NAME: Benzothiazoleacetic acid, 4-chloro-2-oxo-3(2H)-
CHEMICAL COMMON NAME: Benazolin
PLANT: Rapeseed (BRASSICA CAMPESTRIS); Chamomile, wild (MATRICARIA sp.); Chickweed, common (STELLARIA MEDIA); Cleavers (GALIUM APARINE)
EXPERIMENTAL DOSE: 300 and 500 g/ha; ester
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; time period--1974 to 1976; 76 trials in UK, France, and Sweden
EFFECTS: Effective control of weeds at 300 g/ha rate except STELLARIA (slight effect) with no adverse effect on rapeseed
COMMENTS: Under range of climatic and cultural conditions, combinations of two herbicides, benazolin ester, and 3,6 dichloropicolinic acid provided extremely effective broad-leaved weed control whilst maintaining good margin of crop safety
REFERENCE: Rea, B.L., R.A. Palmer, and A. de St. Blanquat, "Weed Control in Rapeseed With Benazolin Ester/3,6 Dichloropicolinic Acid Mixtures," Proc. 1976 Br. Crop Protection Conf. 2:517-624 (1976).

<1649>
CHEMICAL NAME: Benzothiazoleacetic acid, 4-chloro-2-oxo-3(2H)-, potassium salt
CHEMICAL COMMON NAME: Benazolin, potassium salt
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 0.5 and 2.0 kg/ha
APPLICATION METHODS: Postemergence spray at a volume rate of 352 l./ha and pressure of 2.1 kg/cm (2)
EXPERIMENTAL CONDITIONS: Greenhouse study; plants watered from above before spraying and from below after spraying; 2 replications; visual assessments at intervals, dry weights determined 8 weeks after spraying
EFFECTS: Slight epinasty of sprayed leaves within one week; new leaves emerging 1 and 2 months after spraying with 2 kg/ha severely deformed; no significant reduction in dry weight compared with control
REFERENCE: Clay, D.V., "The Response of Strawberry to a Range of Foliage Acting Herbicides," Proc. Brit. Weed Control Conf. 11:409-416 (1972).

<1650>
CHEMICAL NAME: Benzothiazolium, 3-(3,5,5-trimethylhexyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 86 and 58% cucumber root growth at 10 and 100 ppm, respectively; 102 and 47% wheat root growth at 10 and 100 ppm, respectively
COMMENTS: Slight wheat root stimulation at 10 ppm
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<1651>
<1651>
CHEMICAL NAME: Benzothiopene, 3-acetyl-, 1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 80 and 44% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1652>
CHEMICAL NAME: Benzothiopene, 3-chloro-, 1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 88 and 2% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1653>
CHEMICAL NAME: Benzothiophene
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 91 and 86% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1654>
CHEMICAL NAME: Benzothiophene-1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 46 and 3% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1655>
CHEMICAL NAME: Benzothiophene-3-acetic acid
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 8 and 3% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1656>
CHEMICAL NAME: Benzothiophene-3-acetic acid-1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 53 and 31% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1657>
CHEMICAL NAME: Benzothiophene-3-carboxylic acid
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 77 and 16% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1658>
CHEMICAL NAME: Benzothiophene-3-carboxylic acid-1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 111 and 104% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1659>
CHEMICAL NAME: Benzothiophene, di-, 5-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 92 and 94% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1660>
CHEMICAL NAME: Benzothiophene, di-, 5-monoxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 97 and 59% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1661>
CHEMICAL NAME: Benzothiophene, 2-bromo-, 1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 79 and 3% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1662>
CHEMICAL NAME: Benzothiophene, 2-chloro-, 1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 102 and 2% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1663>
<1663>
CHEMICAL NAME: Benzothiophene, 2-chloro-3-methoxy-, 1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 93 and 71% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1664>
CHEMICAL NAME: Benzothiophene, 2,3-dibromo-2,3-dihydro-, 1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 96 and 5% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1665>
CHEMICAL NAME: Benzothiophene, 2,3-dichloro-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 91 and 32% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951)

<1666>
CHEMICAL NAME: Benzothiophene, 2,3-dichloro-, 1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 33 and 5% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1667>
CHEMICAL NAME: Benzothiophene, 2,3-dichloro-2,3-dihydro-, 1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 80 and 3% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1668>
CHEMICAL NAME: Benzothiophene, 2,3,X,Y-tetrachloro-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 78 and 65% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1669>
CHEMICAL NAME: Benzothiophene, 2,3,X,Y,Z-pentachloro-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 86 and 52% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1670>
CHEMICAL NAME: Benzothiophene, 3-acetyl-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petridishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 59 and 7% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1671>
CHEMICAL NAME: Benzothiophene, 3-chloro-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 56 and 58% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1672>
CHEMICAL NAME: Benzothiophene, 3-chloromethyl
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 74 and 23% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1673>
CHEMICAL NAME: Benzothiophene, 3-cyanomethyl-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 17 and 11% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1674>
CHEMICAL NAME: Benzothiophene, 3-cyanomethyl-, 1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 34 and 21% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1675>
<1675>
CHEMICAL NAME: Benzothiophene, 3-ethoxy-, 1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 89 and 68% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1676>
CHEMICAL NAME: Benzothiophene, 3-hydroxy-, 1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 108 and 101% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1677>
CHEMICAL NAME: Benzothiophene, 3-methoxymethyl-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 66 and 46% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1678>
CHEMICAL NAME: Benzothiophene, 3-methoxymethyl-, 1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 74 and 45% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1679>
CHEMICAL NAME: Benzothiophene, 3-nitro-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 73 and 18% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1680>
CHEMICAL NAME: Benzothiophene, 3-thiocyanomethyl
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 100 and 22% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1681>
CHEMICAL NAME: Benzothiophene, 6-nitro-, 1-dioxide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 89 and 1% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<1682>
CHEMICAL NAME: Benzotriazole, 1H-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 50 ppm
APPLICATION METHODS: Soil treatments of 50 ml for 10 consecutive days
EXPERIMENTAL CONDITIONS: Tomatoes grown in sand; application at 6-leaf stage
EFFECTS: Breaking of apical dominance; reduction in number of leaflets per leaf; elimination of leaf serrations; cupping of leaflets; elongation of petioles--weight of leaves not supported
REFERENCE: Davis, D., "Benzotriazole, a Plant Growth Regulator," Science 120:989 (1954).

<1683>
CHEMICAL NAME: Benzotriazole, 5-chloro-1H-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1x10(-4)M
APPLICATION METHODS: 96-hr treatment at 25 C
EXPERIMENTAL CONDITIONS: Primary root elongation inhibition determined
EFFECTS: 50% root growth inhibition
REFERENCE: Klingensmith, M.J., "The Effect of Certain Benzazole Compounds on Plant Growth and Development," Am. J. Bot. 48:40-45 (1961).

<1684>
CHEMICAL NAME: Benzoxazolethione, 2(3H)-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1x10(-3)M
APPLICATION METHODS: 96-hr treatment at 25 C
EXPERIMENTAL CONDITIONS: Primary root elongation inhibition determined
EFFECTS: 50% root growth inhibition
REFERENCE: Klingensmith, M.J., "The Effect of Certain Benzazole Compounds on Plant Growth and Development," Am. J. Bot. 48:40-45 (1961).

<1685>
CHEMICAL NAME: Bi-1,4-Cyclohexadiene-1-yl]-3,3',6,6'-tetrone, 2,2',5,5'-tetrahydroxy-4,4'-dimethyl-
CHEMICAL COMMON NAME: Oosporein
PLANT: Wheat (TRITICUM AESTIVUM); Tobacco (NICOTIANA sp.); Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1X10(-5) to 1X10(-2)M
APPLICATION METHODS: Solution soak (wheat coleoptile) or spray on intact plants; acetone and 0.1% Tween-20 added
EXPERIMENTAL CONDITIONS: Laboratory study; wheat coleoptile sections--24 hr roller tube incubation at 21 C; spray on intact tobacco and bean plants
EFFECTS: Inhibition of growth of oat coleoptile sections and localized stunting/leaf damage of tobacco and bean plants at 1X10(-3)M
COMMENTS: Toxin produced pronounced plant growth inhibiting and phytotoxic effects
REFERENCE: Cole, R.J., J.W. Kirksey, H.G. Cutler, and E.E. Davis, "Toxic Effects of Oosporein From CHAETOMIUM TRILATERALE," J. Agric. Food Chem. 22(3):517-520 (1974).

<1686>
CHEMICAL NAME: Bi-2,4-cyclopentadiene-1-yl, 1,1',2,2',3,3',4,4',5,5'-decachloro-
CHEMICAL COMMON NAME: Dienochlor
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal--
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: No phytotoxicity
COMMENTS: 50% WP formulation; trade name Pentac
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<1687>
<1687>
CHEMICAL NAME: Bi-2,4-cyclopentadiene-1-yl, 1,1',2,2',3,3',4,4',5,5'-decachloro-
CHEMICAL COMMON NAME: Dienochlor
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal--based upon formulation per 100 gal water
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: No phytotoxicity
COMMENTS: 50% WP formulation; trade name Pentac
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<1688>
CHEMICAL NAME: Bi-2,4-cyclopentadiene-1-yl, 1,1',2,2',3,3',4,4',5,5'-decachloro-
CHEMICAL COMMON NAME: Dienochlor
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 50% WP and 1.5 lb/gal EC formulations of dienochlor (Pentac)
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Significant growth reduction with 0.25 and 0.125% EC formulation, no growth effects with WP; foliar injury, more pronounced with EC formulation
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<1689>
CHEMICAL NAME: Bi-2,4-cyclopentadiene-1-yl, 1,1',2,2',3,3',4,4',5,5'-decachloro-
CHEMICAL COMMON NAME: Dienochlor
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA);Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Dracena (DRACAENA SANDERIANA); Prayer plant (MARANTA LEUCONEURA); Sword-fern (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
EXPERIMENTAL DOSE: 0.25 and 0.5 lb/100 gal
APPLICATION METHODS: Formulation--50% WP at 0.5 and 1.0 lb respectively; 4 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume equivalent); Plyac (spreader-sticker) added to controls and treatments at rate of 2 oz/100 gal water; sprays applied prior to 10:00 a.m.; 5 tests from May to November; temperature-- 83 to 98 F (day and 56 to 78 F (night); greenhouse conditions
EFFECTS: No injury to any plant; powder-like residue on all plants at 0.5 lb rate
COMMENTS: Experimental concentrations--recommended and twice the recommended rate
REFERENCE: Hamlen, R.A. and R.W. Henley, "Phytotoxicity to Tropical Foliage Plants of Repeated Insecticide and Miticide Applications Under Fiberglass-Covered Greenhouse Conditions," Proc. Fla. State Hort. Soc. 89:336-338 (1976).

<1690>
CHEMICAL NAME: Bicyclo[2.2.1]hepta-2,5-diene
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.3 mM
APPLICATION METHODS: Plants grown in solution containing chemical being tested
EXPERIMENTAL CONDITIONS: After germination in petri dishes, seedlings transplanted to reagent tube containing 6 g vermiculite and 25 ml Hoagland solution 2 that included 0.3 mM of chemical being tested; plants grown in growth chamber--16 hr photoperiod, 25 C day temperature and 12 C night temperature
EFFECTS: Moderately toxic
COMMENTS: General toxic effects reported for all chemicals studied--growth retardation, tip burn followed by leaf scorch and death
REFERENCE: Chen, S-C. and R.M. Elofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<1691>
CHEMICAL NAME: Bicyclo[2.2.1]heptane-2-carbonitrile,5-chloro-6-[[[(methylamino)carbonyl]oxy]imino-,[1S-(alpha, 2beta, 4alpha, 5alpha, 6E)]-
CHEMICAL COMMON NAME: Tranid
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 2 lb/gal technical Tranid EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Foliar damage at 0.25 and 0.125% concentrations
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<1692>
CHEMICAL NAME: Blendene
CHEMICAL COMMON NAME: Blendene
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<1693>
CHEMICAL NAME: Borane, trifluoro-, ammoniate
CHEMICAL COMMON NAME: S-1840
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 20.0 and 30.0 lb/A; 0.25% Triton X-100
APPLICATION METHODS: Foliar spray, 360 gal/A; 3 weekly applications
EXPERIMENTAL CONDITIONS: Field study; time period--1948 to 1950
EFFECTS: Effective crabgrass control at highest rates with very slight turfgrass damage
COMMENTS: S-1840, S-1980, and S-1998 gave crabgrass control equivalent to several phenyl mercury compounds and potassium cyanate; essentially no injury evident 36 days after treatment
REFERENCE: Engel, R.E. and R.J. Aldrich, "Three New Compounds for controlling Crabgrass in Turf," Proc. N.E. Weed cont. Conf. 5:151-160 (1951).

<1694>
CHEMICAL NAME: Borane, trifluoro-, cmpd. with bis(N,N-di-2-hydroxyethyl-N-dodecyl)amino
CHEMICAL COMMON NAME: S-1998
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 4.0 and 6.0 gal/A
APPLICATION METHODS: Foliar spray, 360 gal/A; 3 weekly applications
EXPERIMENTAL CONDITIONS: Field study; time period--1948 to 1950
EFFECTS: Effective crabgrass control at highest rates with very slight turfgrass damage
COMMENTS: S-1840, S-1980, and S-1998 gave crabgrass control equivalent to several phenyl mercury compounds and potassium cyanate; essentially no injury evident 36 days after treatment
REFERENCE: Engel, R.E. and R.J. Aldrich, "Three New Compounds for controlling Crabgrass in Turf," Proc. N.E. Weed cont. Conf. 5:151-160 (1951).

<1695>
CHEMICAL NAME: Borane, trifluoro-, cmpd. with N,N,N-tris(2-hydroxypropyl)amino
CHEMICAL COMMON NAME: S-1980
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 4.0 gal/A
APPLICATION METHODS: Foliar spray, 360 gal/A; 3 weekly applications
EXPERIMENTAL CONDITIONS: Field study; time period--1948 to 1950
EFFECTS: Effective crabgrass control with no adverse effect on turfgrasses
COMMENTS: S-1840, S-1980, and S-1998 gave crabgrass control equivalent to several phenyl mercury compounds and potassium cyanate; essentially no injury evident 36 days after treatment
REFERENCE: Engel, R.E. and R.J. Aldrich, "Three New Compounds for controlling Crabgrass in Turf," Proc. N.E. Weed cont. Conf. 5:151-160 (1951).

<1696>
CHEMICAL NAME: Borax
CHEMICAL COMMON NAME: Borascu
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sowthistle, perennial (SONCHUS ARVENSIS)
EXPERIMENTAL DOSE: 12 to 15 lb/sq rd
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; combinations of herbicide treatments, seasonal application, cultivation, and cropping investigated over 3 yr period (1955-1957)
EFFECTS: Effective thistle control with 3-plus years residual effect
COMMENTS: Canada thistle and perennial sowthistle reacted to 2,4-D and MCPA; ester and amine forms of 2,4-D equally effective for sowthistle, while both and MCPA equal for Canada thistle; both herbicides prevent seed production, kill susceptible plants and weaken resistant plants
REFERENCE: Derscheid, L.A., R.L. Nash, and G.A. Wicks, "Thistle Control With Cultivation, Cropping and Chemicals," Weeds 9(1):90-102 (1961).

<1697>
CHEMICAL NAME: Boric acid, sodium salt
CHEMICAL COMMON NAME: Polybor
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sowthistle, perennial (SONCHUS ARVENSIS)
EXPERIMENTAL DOSE: 12 to 15 lb/sq rd
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; combinations of herbicide treatments, seasonal application, cultivation, and cropping investigated over 3 yr period (1955-1957)
EFFECTS: Effective thistle control with 3-plus years residual effect

<1697>
<1697> CONT.
COMMENTS: Canada thistle and perennial sowthistle reacted to 2,4-D and MCPA; ester and amine forms of 2,4-D equally effective for sowthistle, while both and MCPA equal for Canada thistle; both herbicides prevent seed production, kill susceptible plants and weaken resistant plants
REFERENCE: Derscheid, L.A., R.L. Nash, and G.A. Wicks, "Thistle Control With Cultivation, Cropping and Chemicals," Weeds 9(1):90-102 (1961).

<1698>
CHEMICAL NAME: Boron
CHEMICAL COMMON NAME: Boron
PLANT: Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1.05 to 2.26 ppm
APPLICATION METHODS: Soil component
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Brown spotting and burning of barley and wheat leaves
COMMENTS: As applied nitrogen increased, B toxicity decreased; increasing rates of compost caused increased Mn content but toxicity not associated with increase
REFERENCE: Gupta, U.C., J.D.E. Sterling, and H.G. Nass, "Influence of Various Rates of Compost and Nitrogen on the Boron Toxicity Symptoms in Barley and Wheat," Can. J. Plant. Sci. 53:451-456 (1973).

<1699>
CHEMICAL NAME: Bromoethane
CHEMICAL COMMON NAME: Bromoethane
PLANT: Lettuce (LACTUCA SATIVA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 100%
APPLICATION METHODS: Seed soak
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; seeds soaked for 24 or 44 hr then placed on filter paper contained in petri plates; solvents removed by vacuum drying
EFFECTS: After 44-hr soak, total suppression of lettuce seed germination and slightly reduced germination of peas
COMMENTS: Anhydrous dichloromethane had no effect on germination or on uptake of oxygen when lettuce seeds treated for up to 24 hours; in contrast, anhydrous acetone distinctly depressed uptake of oxygen; when coumarin applied together with dichloromethane, germination and uptake of oxygen inhibited
REFERENCE: Meyer, H. and A. M. Mayer, "Permeation of Dry Seeds With Chemicals: Use of Dichloromethane," Science 171:583-584 (1971).

<1700>
CHEMICAL NAME: Butadiene, 2,3-dimethyl
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.3 mM
APPLICATION METHODS: Plants grown in solution containing chemical being tested
EXPERIMENTAL CONDITIONS: After germination in petri dishes, seedlings transplanted to reagent tube containing 6 g vermiculite and 25 ml Hoagland solution 2 that included 0.3 mM of chemical being tested; plants grown in growth chamber--16 hr photoperiod, 25 C day temperature and 12 C night temperature
EFFECTS: Strongly toxic to wild oat
COMMENTS: General toxic effects reported for all chemicals studied--growth retardation, tip burn followed by leaf scorch and death
REFERENCE: Chen, S-C. and R.M. Elofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<1701>
CHEMICAL NAME: Butanamide, N,N-dimethyl-4-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--abnormal growth; Petri dish test--102, 61, and 26% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<1702>
CHEMICAL NAME: Butane, 1,4-bis(diazoacetyl)-
CHEMICAL COMMON NAME: DAB
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 6.0 X 10(-3) M for 2 hr
APPLICATION METHODS: Immersion of seedlings
EXPERIMENTAL CONDITIONS: Laboratory study; seedlings (6-10 mm); primary root meristem studied
EFFECTS: Chromosome aberrations within 12 hours after treatment
COMMENTS: EOC caused most pronounced undelayed-type mutagenic effect, acting primarily on terminal portions of chromosomes and regions of secondary constrictions; DAB gave low frequency of chromatid-type aberrations; under combined action of the two agents, effect depended on sequence of treatment
REFERENCE: Gechev, K.I., "The Combined Action of Certain Substances on the Hereditary Structures of Barley," Genetica 8(12):86-97 (1972). (UDC 575.24:633.16).

<1703>
CHEMICAL NAME: Butanedioic acid
CHEMICAL COMMON NAME: Succinic acid
PLANT: Clover, red (TRIFOLIUM PRATENSE)
EXPERIMENTAL DOSE: 1:20 dilution to undiluted filtrate
APPLICATION METHODS: Solution soak of pregerminated seed
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination for 24 hr prior to solution exposure; evaluation time--24 hr
EFFECTS: No inhibition of root elongation
COMMENTS: Inhibition of root-elongation by culture filtrates of R. LEGUMINICOLA mainly due to large amounts of cinnamic, phenylacetic, benzoic, and o-coumaric acids; in the case of R. SOLANI, it was restricted to phenylacetic and m-hydroxyphenylacetic acids in addition to an unidentified acid
REFERENCE: Mizuno, M., K. Kohmoto, S. Nishimura, and N. Nishihara, "Pathochemical Studies on Rhizoctonia Disease. V. Phytotoxic metabolites of RHIZOCTONIA LEGUMINICOLA," J. Fac. Agric. Tottori Univ. 9:1-7 (1974).

<1704>
CHEMICAL NAME: Butanedioic acid
CHEMICAL COMMON NAME: Succinic acid
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 3 x10 (-3) m
APPLICATION METHODS: Submersion of oat coleoptiles
EXPERIMENTAL CONDITIONS: Laboratory study; oat coleoptile assay--increased or inhibited growth of 3mm sections in solutions containing sucrose, IAA, and experimental compounds; coleoptile age--66-69 hr (and at other times)
EFFECTS: No inhibition or stimulation of growth
COMMENTS: Most organic acids accelerated growth in absence of inhibitor but in presence of auxin and sucrose or auxin alone, inhibition of growth by low concentrations of iodoacetate and reversal of inhibition by certain organic acids; sensitivity of sections both to inhibitor and to growth promoting effect of the acids varied with age of the plants; lowest concentration causing definite inhibition steadily decreased with increasing age
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. I. The Action of Iodoacetate and Organic Acids on the AVENA Coleoptile," Am. J. Bot. 35:271-281 (1948).

<1705>
CHEMICAL NAME: Butanedioic acid, [(dimethoxyphosphinothioyl)thio]-, diethyl ester
CHEMICAL COMMON NAME: Malathion
PLANT: Tinda (CITRULLUS VULGARIS); Bottlegoard; Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.03 and 0.04 %
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Leaf spots within 3 days at 0.4 % application rate on all three species
COMMENTS: Safe (non-phytotoxic) insecticides on the cucurbits were DDVP, carbaryl, malathion, endosulfan, thiometon, and phosphamidon
REFERENCE: Sood, N.K., U.K. Kaushik, and V.S. Rathore, "Phytotoxicity of Modern Insecticides to Cucurbits," Indian J. Hort. 29(1):111-113 (1972)

<1706>
CHEMICAL NAME: Butanedioic acid, [(dimethoxyphosphinothioyl)thio]-, diethyl ester
CHEMICAL COMMON NAME: Malathion
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.25 oz/bushel
APPLICATION METHODS: Seed treatment; WP formulations
EXPERIMENTAL CONDITIONS: Field study; slurry treatments of seed; plot--18-ft row with 100 seeds; 8 replications; 19-month old seeds
EFFECTS: Significant decrease in mean number of plants emerged; significant increase in number of mean emergence days
REFERENCE: Starks, K.J. and J.H. Lilly, "Insecticide Seed Treatment of Soybeans in Relation to Phytotoxicity and Seed-Corn Maggot Control," J. Econ. Entomol. 48(5):538-543 (1955).

<1707>
CHEMICAL NAME: Butanedioic acid, [(dimethoxyphosphinothioyl)thio]-, diethyl ester
CHEMICAL COMMON NAME: Parathion
PLANT: Sarson, yellow (BRASSICA CAMPESTRIS)
EXPERIMENTAL DOSE: 0.25, 0.05, 0.1, 0.3, 0.5, 0.7, and 0.8%
APPLICATION METHODS: Seed treatments
EXPERIMENTAL CONDITIONS: Seeds soaked for 4 hours; 50 seeds germinated in Petri dishes; each treatment replicated 3 times, entire experiment replicated twice; observations every 24 hours up to 96 hours; height recorded after 96 hours
EFFECTS: No germination effect; stunting and yellowing at 0.5%, severe stunting and yellowing at 0.8%
COMMENTS: Trade name, Paramar
REFERENCE: Tripathi, R.L. and M.M. Hague, "Studies on Seed Treatment with Insecticides I: Effect of Certain Organophosphorus Insecticides on Germination and Growth of Seedlings of Mustard," Indian Oilseeds J. 7(2):144-147 (1963).

<1708>
<1708>
CHEMICAL NAME: Butanedioic acid, [(dimethoxyphosphinothioyl)thio]-, diethyl ester
CHEMICAL COMMON NAME: Malathion
PLANT: Cabbage, Chinese (BRASSICA PEKINENSIS)
EXPERIMENTAL DOSE: 0.1 kg/ha
APPLICATION METHODS: Insecticidal spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; pollen collected at various times after application; evaluation time--6 hr to 21 da
EFFECTS: Significant pollen sterility for 1 to 14 days
COMMENTS: Most insecticides affected pollen viability only for first 4-5 days, except a few which affected it even up to 12 or 15 days
REFERENCE: Lal, O.P., "Insecticidal Sprayings Causing Pollen Sterility in Chinese Cabbage," Act. Agron. Acad. Scient. Hungar. 24:145-147 (1975).

<1709>
CHEMICAL NAME: Butanedioic acid, [(dimethoxyphosphinothioyl)thio]-, diethyl ester
CHEMICAL COMMON NAME: Malathion
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.05, 0.10, and 0.15%
APPLICATION METHODS: As spray in 625 l./ha of spray material; postemergence on 42-day old crop
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: 0.05% safe, 0.10 and 0.15% had mild effects with 75% of leaves affected after 3 and 6 days
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadyan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<1710>
CHEMICAL NAME: Butanedioic acid, [(dimethoxyphosphinothioyl)thio]-, diethyl ester
CHEMICAL COMMON NAME: Malathion
PLANT: Plum (PRUNUS DOMESTICA); Currant, black
EXPERIMENTAL DOSE: 0.02 and 0.20%
APPLICATION METHODS: Foliar spray; 100 and 200 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; time period--1953 to 1955
EFFECTS: No adverse effects on either variety
COMMENTS: Some marginal scorch developed on black currant leaves sprayed with lime-sulphur but no leaf damage was seen on any bushes; no influence on blossom or fruit-set detected
REFERENCE: Kirby, A.H.M. and M. Bennett, "Phytotoxicity Trials with Acaricides on Black Currant and Plum," Rep. E. Malling Res. Sta. 152-154(1958).

<1711>
CHEMICAL NAME: Butanedioic acid, hydroxy-
CHEMICAL COMMON NAME: Malic acid
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 3x10(-3)M
APPLICATION METHODS: Submersion of oat coleoptiles
EXPERIMENTAL CONDITIONS: Laboratory study; oat coleoptile assay--increased or inhibited growth of 3 mm sections in solutions containing sucrose, IAA, and experimental compounds; coleoptile age--66-69 hr (and at other times)
EFFECTS: Growth stimulation
COMMENTS: Most organic acids accelerated growth in absence of inhibitor but in presence of auxin and sucrose or auxin alone, inhibition of growth by low concentrations of iodoacetate and reversal of inhibition by certain organic acids; sensitivity of sections both to inhibitor and to growth promoting effect of the acids varied with age of the plants; lowest concentration causing definite inhibition steadily decreased with increasing age
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. I. The Action of Iodoacetate and Organic Acids on the AVENA Coleoptile," Am. J. Bot. 35:271-281 (1948).

<1712>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: B-995
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS);Bermudagrass, common (CYNODON DACTYLON);Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 50, 250, and 500 ppm
APPLICATION METHODS: 5 sec immersion of intact plant in test solution
EXPERIMENTAL CONDITIONS: Greenhouse container culture; soil--Newe Yaar clay; evaluation time--4 and 6 wk
EFFECTS: Reduced shoot length of all test plants
COMMENTS: Effects varied from stimulation to inhibition of aerial growth, increases in shoot number, and kill of plants
REFERENCE: Horowitz, M., "Effect of Growth Regulators on CYNODON DACTYLON (L.) Pers., SORGHUM HALEPENSE (L.) Pers., and CYPERUS ROTUNDUS L.," Weed Res. 12(1):11-20 (1972).

<1713>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: B-995
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS);Bermudagrass, common (CYNODON DACTYLON);Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 0.375 and 0.750 kg/ha
APPLICATION METHODS: Postemergence spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Greenhouse container culture; evaluation time--5 mo
EFFECTS: Reduced shoot growth of sorghum and nutsedge but not of bermudagrass
COMMENTS: Effect of combinations of foliar spraying with ethephon, MH, flurecol or chlorflurecol followed after 2 days by spraying with the herbicides ddalapon or aminotriazole activated with ammonium thiocyanate, investigated; herbicides appllied alone had no marked effect but combinations generally more toxic; ethephon stimulated growth of C. DACTYLON but combination with dalapon was phytotoxic; MH sprayed alone and combinations of flurecol or chlorflurecol with dalapon or aminotriazole were highly inhibitory to S. HALEPENSE; none of the treatments completely inhibited regrowth of G. ROTUNDUS
REFERENCE: Horowitz, M., "Effect of Growth Regulators on CYNODON DACTYLON (L.) Pers., SORGHUM HALEPENSE (L.) Pers., and CYPERUS ROTUNDUS L.," Weed Res. 12(1):11-20 (1972).

<1714>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: S-21634
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Nutsedge, purple (CYPERUS ROTUNDUS); Potato (SOLANUM TUBEROSUM); Juniper (JUNIPERUS CHINENSIS); Privet (LIGUSTRUM sp.); Strawberry (FRAGARIA sp.); Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Holly (ILEX CRENATA); Peanut (ARACHIS HYPOGAEA); Yew (TAXUS INTERMEDIA); Soybean (GLYCINE MAX); Rice (ORYZA SATIVA);
EXPERIMENTAL DOSE: 2.0 to 6.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 gal/A (min)
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective nutsedge control without injury to other plants
COMMENTS: Foliar sprays at rates of 2-6 lbs/A killed top growth and severely inhibited or prevented regrowth from underground nutlets; low rates effective under good growing conditions; higher rates necessary when conditions not optimum; S-21634 not active as preemergent spray; in active growth foliage became chlorotic in 3-5 days, then necrotic several days later, and took up to 4 weeks to die; regrowth from nutlets, both active and dormant, severely retarded.
REFERENCE: Schwartzbeck, R.A. and J.W. Pullen, "S-21634, 1-Methyl-4-Phenylpyridinium Chloride, for the Control of Nutsedge, " Proc. Northeast. Weed Sci. Soc. 28:46 (1974).

<1715>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: B 995
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 1250 to 5000 ppm
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Reduced growth in height and increased leaf production
COMMENTS: Retarding effects on shoot growth and marked increase in length of roots; production of leaves per plant increased by 2500 ppm treatment; no phytotoxicity observed on foliage
REFERENCE: Pandey, S.N., "Effect of B 995 (N-Dimethylamino Succinic Acid) on Growth and Alkaloid Content of Tobacco (NICOTIANA TABACUM L.) Plants," Jawaharlal Nehru Krishi Vishwa Vidyalaya 7(1):31-34 (1973).

<1716>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: Aminozide
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.5%
APPLICATION METHODS: Foliar spray to run-off
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Growth retardation with delayed flowering
COMMENTS: Flowering delay caused by aminozide and F 529 formulations exceeded that by phosfon 1.5 added to compost at a rate giving comparable height control; Alar 85 and B-Nine, applied at an identical rate in terms of aminozide content, equally effective and not phytotoxic
REFERENCE: Maw, G.A., "4. Crop Protection," Glasshouse Crops Res. Inst. Rept. 1970:84-98 (1971).

<1717>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: B-Nine
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.25% (2 sprays)
APPLICATION METHODS: Foliar spray to run-off
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Growth retardation with delayed flowering
COMMENTS: Flowering delay caused by aminozide and F 529 formulations exceeded that by phosfon 1.5 added to compost at a rate giving comparable height control; Alar 85 and B-Nine, applied at an identical rate in terms of aminozide content, equally effective and not phytotoxic
REFERENCE: Maw, G.A., "4. Crop Protection," Glasshouse Crops Res. Inst. Rept. 1970:84-98 (1971).

<1718>
<1718>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: Alar 85
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.25% (2 sprays)
APPLICATION METHODS: Foliar spray to run-off
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Growth retardation with delayed flowering
COMMENTS: Flowering delay caused by aminozide and F 529 formulations exceeded that by phosfon 1.5 added to compost at a rate giving comparable height control; Alar 85 and B-Nine, applied at an identical rate in terms of aminozide content, equally effective and not phytotoxic
REFERENCE: Maw, G.A., "4. Crop Protection," Glasshouse Crops Res. Inst. Rept. 1970:84-98 (1971).

<1719>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: B-995
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 3 X 10(-2) M
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Inhibited bud development and size in proximal root sections in darkness and reduced leaf size in light
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

<1720>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: Daminozide
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 3, 4, 6 and 6.8 kg/ha (8500, 15000, and 17000 ppm, respectively)
APPLICATION METHODS: Foliage spray, 400 l./ha
EXPERIMENTAL CONDITIONS: Tubers planted in pots, shoots emerged in 7-8 days; spraying after shoot establishment; pots placed in randomized blocks
EFFECTS: Tuber production significantly reduced; significant reduction also of non-dormant tubers and new tuber dry weight; parent tuber dry wright increased; no significant effect on shoot number
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<1721>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: Daminozide
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 3.4 and 6.8 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: No adverse effect observed
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<1722>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: Daminazide
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 6.0 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha; 0.5% Biofilm added
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: No adverse effects observed
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<1723>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: Daminozide
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 6.0 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl-bromide-fumigated soil (Maverly loam); evaluation time--37 and 41 days; tubers recovered and weighed or replanted in vermiculite for further study

<1723> CONT.
EFFECTS: Reduced tuber numbers but increased tuber germination
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<1724>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: Daminozide
PLANT: Apple (PYRUS MALUS)
EXPERIMENTAL DOSE: 1500 to 2500 ppm
APPLICATION METHODS: Foliar spray; 400 l./ha (field) and 1200 l./ha
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Reduced growth in apple and peanut with no adverse effect on plum
COMMENTS: Foliar application selectively inhibited terminal growth of many woody and non-woody species; vegetable shoot growth of apple, plum and cherry effectively reduced; results on apple and plum comparable to daminozide; internode length reduced with apple and cherry but not plum; phytotoxicity usually restricted to minor chlorosis and leaf curl; no fruit damage observed
REFERENCE: England, D.J.F., "PP528 - A New Phenyl Tetrazole Plant Growth Regulator," Proc. 12th. Br. Weed Cont. Conf. 1:123-130 (1974).

<1725>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: Daminozide
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 500 ppm
APPLICATION METHODS: Postemergence treatments in nutrient solution; 5 applications to corn within 12 days
EXPERIMENTAL CONDITIONS: Hydroponically grown in greenhouse; seeds sprouted and transferred to 1-gal stone crocks, 5 plants/crock; randomized block design with 5 replications; corn harvested after 31 days
EFFECTS: No significant reduction in top or root growth or in cation exchange capacity compared to control
COMMENTS: Tradename B-nine
REFERENCE: Lambeth, V.N. and R.C. Das, "Growth Regulator Effects on Top-Root Ratio and Cation Exchange Capacity of Snap Bean and Sweet Corn Roots," J. Am. Soc. Hortic. Sci. 86:357-360 (1965).

<1726>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: Alar
PLANT: Fumitory (FUMARIA OFFICINALIS)
EXPERIMENTAL DOSE: 1000 and 5000 ppm; 20 ppm Tween-20
APPLICATION METHODS: Postemergence spray to run-off
EXPERIMENTAL CONDITIONS: Field study; soil--Greendale; greenhouse study; soil--Lodi silt loam; time period--1965 to 1968
EFFECTS: At 5000 ppm, reduced seed yield, germinability, and other adverse effects
COMMENTS: Alar delayed inflorescence development of land cress plants 12 to 14 days following cold induction; alar-treated plants greener, shorter and more compact; pods smaller in length and diameter; seeds of alar-treated plants delayed in maturity, smaller, and had much lower per cent of germination
REFERENCE: Andrews, F.S., "The Influence of Succinic Acid 2,2-Dimethylhydrazide (Alar) on Plant Growth, Inflorescence and Seed Development and Chemical Analysis of BARBAREA VERNA, Land Cress," J. Am. Soc. Hort. Sci. 94:28-32 (1969).

<1727>
CHEMICAL NAME: Butanedioic acid, mono(2,2-dimethylhydrazide)
CHEMICAL COMMON NAME: B 995
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<1728>
<1728>
CHEMICAL NAME: Butanedioic acid, sulfo-, 1,4-bis(2-ethylhexyl) ester, sodium salt
CHEMICAL COMMON NAME: Vatsol OT
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<1729>
CHEMICAL NAME: Butanedioic acid, 2-dodecyl-3-methyl-, [S-(R*,S*)]-
CHEMICAL COMMON NAME: Roccellic acid
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Growth reduction of wheat but no blockage of GA-stimulated pea growth
COMMENTS: Of 524 compounds examined, 71 were found highly active and further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<1730>
CHEMICAL NAME: Butanoic acid
CHEMICAL COMMON NAME: Butyric acid
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: Slight damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<1731>
CHEMICAL NAME: Butanoic acid
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 51, 31, 27, and 18% growth at 100, 200, 300, and 400 ppm, respectively
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<1732>
CHEMICAL NAME: Butanoic acid, 2,3,3-trichloro-
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 3.2%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<1733>
CHEMICAL NAME: Butanoic acid, 3-hydroxy-
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:2000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<1734>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Panicum, fall (PANICUM DICHOTOMIFLORUM); Grasses; Broadleaf weeds; Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam; time period--1975 and 1976
EFFECTS: Effective control of broadleafs and little or no control of grasses with no adverse effect on alfalfa yield
COMMENTS: Dinoseb, metolachlor, and methazole significantly thinned out alfalfa seedings; benefin, EPTC, profluralin, and butralin were outstanding treatments in grassy weed control; Vel 5052 did good job in controlling fall panicum and other grassy weeds but poor in broadleaf weed control
REFERENCE: Vengris, J. "Annual Weed Control in Alfalfa New Seedlings," Proc. Northeast. Weed Sci. Soc. 31:99-103 (1977).

<1735>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Pigweed, smooth (AMARANTHUS HYBRIDUS); Amaranth, palmer (AMARANTHUS PALMERI); Pigweed, tumble (AMARANTHUS ALBUS); Amaranth, spiny (AMARANTHUS SPINOSUS)
EXPERIMENTAL DOSE: 0.125 and 0.5 lb/A
APPLICATION METHODS: Postemergence applications
EXPERIMENTAL CONDITIONS: Field study; applications made when plants 3 to 6 inches tall; observations made 13 days after treatment
EFFECTS: Best control at higher rate; 50% control of all species except redroot (60%) and tumble (20%) pigweed
COMMENTS: Little variation in pigweed susceptibility to preplant and preemergence herbicides tested, (no specific data given); differences in pigweed susceptibility noted using postemergence herbicides
REFERENCE: Santelmann, P.W. and L. Evetts, "Germination and Herbicide Susceptibility of Six Pigweed Species," Weed Sci. 19(1):51-54 (1971).

<1736>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Couchgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2) M, 10(-3) M, and 10(-4) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch, pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1737>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Orchard grass (DACTYLIS GLOMERATA); Fescue, creeping red (FESTUCA RUBRA); Timothy (PHLEUM PRATENSE); Bentgrass (AGROSTIS sp.); Plants
EXPERIMENTAL DOSE: 2.0 lb/A; amine
APPLICATION METHODS: Postemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Puget silt loam
EFFECTS: Effective control of weeds with no adverse effect on turf grasses
COMMENTS: Orchardgrass seed yields, significantly decreased by 2,4-D (acid) and silvex (yields from these plots did not differ significantly); silvex and 2,4,5-T ester applications in red fescue plantings significantly decreased seed yield compared to 2,4-D acid and MCPA applications; silvex applications resulted in significantly lower yield of red fescue seed
REFERENCE: Peabody, D.V. and H.M. Austenson, "Herbicides and Their Effect on the Yield of Grass Seed," Agron. J. 57(1):633-634 (1965).

<1738>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Soybean (GLYCINE MAX); Sesbania, hemp (SESBANIA EXALTATA); Mexicanweed (CAPERONIA CASTANAEFOLIA); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Dayflower, common (COMMELINA COMMUNIS)
EXPERIMENTAL DOSE: 0.22 kg/ha
APPLICATION METHODS: Postemergence spray; 2.0 m swath; 0.5% X-77 surfactant
EXPERIMENTAL CONDITIONS: Field study; soil--heavy clay; evaluation time--2 or 6 wk

<1738>
<1738> CONT.
EFFECTS: Slight-moderate damage to soybean with no effect on hemp sesbania and slight-moderate control of other weeds
COMMENTS: As postemergence treatments, bentazon plus surfactant applied topically and linuron plus surfactant or metribuzin plus surfactant directed gave good to excellent control of dayflower, hemp sesbania was controlled by treatments containing linuron, metribuzin or prometryne, all plus surfactant and directed; mexicanweed was controlled by directed applications of treatments containing linuron, metribuzin, prometryne or 2,4-DB, all plus surfactant; good control of morningglory was obtained with directed applications of treatments containing 2,4-DB, dinoseb + naptalam plus surfactant, or prometryne plus surfactant
REFERENCE: Eastin, E.F., "Control of Problem Weeds in Texas Soybeans," Proc. South. Weed Sci. Soc. 26:67-73 (1973).

<1739>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--50% or greater inhibition in sorghum and cucumber but less than 50% in oat at 1 ppm, 50% or greater inhibition in all plants at 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 ppm, 50% or greater in sorghum but less than 50% inhibition in oat at 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<1740>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 0.45 kg/ha
APPLICATION METHODS: Postemergence spray at a volume of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: 30% weed control
COMMENTS: Hophornbeam copperleaf--southwestern weed prevalent in peanuts
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<1741>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Clover, white (TRIFOLIUM REPENS)
EXPERIMENTAL DOSE: 0.56, 1.12 and 1.68 kg/ha
APPLICATION METHODS: Formulations--dimethylamine salt and isooctyl ester of 2,4-DB; postemergence broodcast applications at 374 l./ha; applications made at early vegetative growth stage, at budstage and at flowering stage
EXPERIMENTAL CONDITIONS: Dayton silt loam soil; 2 year study; split-plot design with 4 replications; main plots were 2,4-DB formulation and subplots were rate of application; seed yields determined by harvesting strip from center of subplots; cultivars New Zealand and Louisiana S-1
EFFECTS: Applications of both formulations reduced seed production when applied at vegetative and bud stages of New Zealand cultivar and all 3 stages of Louisiana S-1; flowering stage of New Zealand--only isoctyl ester at 1.12 and 1.68 kg/ha caused significant yield reduction; except for New Zealand flowering stage, 0.56 kg/ha (half the recommended rate for forage legumes) significantly reduced yields
COMMENTS: Usefulness of 2,4-DB for weed control in white clover fields depends on which reduces yield more, weeds or 2,4-DB, and on availability of alternate weed control methods
REFERENCE: Lee, W.O., "Effect of 2,4-DB on White Clover Seed Production," Weed Sci. 20(4):330-331 (1972).

<1742>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Clover, red (TRIFOLIUM PRATENSE)
EXPERIMENTAL DOSE: 1.12 and 1.68 kg/ha
APPLICATION METHODS: Isooctyl ester; postemergence application as spray in 140 l./ha water
EXPERIMENTAL CONDITIONS: Albright-Landry silt loam to clay loam soils; 2 stage application--as crop began spring growth (stage 1) and when crop was 7.5--10 cm high (stage 2); split plot design with 6 replications; seed yields determined by harvesting strips from herbicide subplots
EFFECTS: Severe delay in flowering at both rates and at both stages; significant decrease in seed yield at both rates and stages; no significant effect on germination
COMMENTS: 2,4-D considered too toxic for weed control in red clover that is grown for seed; below normal precipitation, early frost and snow reduced seed yields
REFERENCE: Darwent, A.L. and P. Pankiw, "Effects of Several Herbicides on Red Clover Seed Production," Can. J. Plant Sci. 56:413-415 (1976).

<1743>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 1.1 kg/ha
APPLICATION METHODS: Postemergence April and September applications
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Serious injury only to crownvetch; weeds not controlled
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<1744>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Soybean (GLYCINE MAX); Cocklebur, common (XANTHIUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 0.2 kg/ha
APPLICATION METHODS: Preemergence (metribuzin); postemergence (bentazon); postemergence directed (dinoseb and 2,4-DB); 187 l./ha; varied combined and sequential treatments
EXPERIMENTAL CONDITIONS: Field study; soil--Sharkey clay loam; time period--1971 to 1973
EFFECTS: Moderate control of cocklebur with no adverse effect on soybean yield
COMMENTS: Sequential applications of metribuzin applied preemergence, and dinoseb, 2,4-DB, applied postemergence, provided at least 90% control of common cocklebur and increased soybean yields; use of single herbicide applications less effective than sequential applications, but metribuzin applied preemergence more effective in controlling common cocklebur and increasing soybean yields than single applications of any herbicide applied postemergence
REFERENCE: McWhorter, C.G. and J.M. Anderson, "Effectiveness of Metribuzin Applied Preemergence for Economical Control of Common Cocklebur in Soybeans," Weed Sci. 24(4):385-390 (1976).

<1745>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Soybean (GLYCINE MAX); Cocklebur, common (XANTHIUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 0.11, 0.22, and 0.44 kg/ha
APPLICATION METHODS: Postemergence spray; 262 l./ha
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Cocklebur effectively controlled in soybeans although slight to moderate damage to soybeans was observed; increased soybean yield usually resulted, but not in one case
COMMENTS: Seed yields growing free of cocklebur not reduced by chloroxuron but in some cases by 2,4-DB
REFERENCE: Gossett, B.J., L.R. Reinhardt, and W.P. Byrd, "Cocklebur Control in Soybeans with 2,4-DB and Chloroxuron," Weed Sci. 20(5):489-491 (1972).

<1746>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1500 ppm
APPLICATION METHODS: Postemergence Spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; evaluation time--up to 16 da at 2-day intervals
EFFECTS: Moderate chlorosis (reduced chlorophyll content) of leaves
COMMENTS: Chlorophyll a and b in the foliage of CYPERUS ROTUNDUS rapidly decreased on application of 1500 ppm of herbicides Bladex-D, Embutox-plus, 2,4,-D, and Tok E-25
REFERENCE: Misra, L. P., L. D. Kapoor, and R. S. Choudhri, "Effect of Herbicides on the Chlorophyll Content of Nutgrass (CYPERUS ROTUNDUS L.)" Photosynthetica 8(3):302-303 (1974).

<1747>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Cocklebur, Pennsylvanian (XANTHIUM PENSYLVANICUM); Jimsomweed (DATURA STRAMONIUM); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Morningglory, tall (IPOMOEA PURPUREA)
EXPERIMENTAL DOSE: 0.224 and 0.448 kg/ha
APPLICATION METHODS: Experiment A--postemergence at 280.5 l./ha; experiment B--postemergence and postdirected at 280.5 l./ha, 1/3 of soybean height sprayed with postdirected treatment
EXPERIMENTAL CONDITIONS: Experiment A--no soybeans, 1.5 by 4.6 m plots, 30 cm tall cocklebur and jimsonweed, 15 cm tall morningglory, dead or injured and living plants counted in 4.6 m(2), with and without cultivation; experiment B--soybeans planted, 25 to 30 cm tall jimsonweed; mattapex silt loam and randomized complete block design with 4 replications in both experiments
EFFECTS: Excellent cocklebur control; prominent jimsonweed injury; effective morningglory control especially at 0.448 kg/ha
COMMENTS: 2,4-DB applied singly in experiment A, in combination with other herbicides in experiment B; cultivation did not improve weed control
REFERENCE: Parochetti, J.V., "Postemergence and Postdirected Broadleaved Weed Control for Soybeans," Proc. Northeast. Weed Sci. Soc. 27:75-79 (1973).

<1748>
<1748>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preplant non-incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: Moderate control of grasses and effective control of broadleaf weeds with moderate damage of soybean and no damage of cotton or corn
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control diuron, 2,4-D, 2,4-DB, Simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but fairly safe on corn; MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4, 6-bis(isopropylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<1749>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 2.0 to 10.0 lb/A; sodium salt
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Slight adverse effect
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<1750>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: DB
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sowthistle, perennial (SONCHUS ARVENSIS)
EXPERIMENTAL DOSE: 5.0 to 6.0 lb/sq rd, G
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; combinations of herbicide treatments, seasonal application, cultivation, and cropping investigated over 3 yr period (1955-1957)
EFFECTS: Effective thistle control with 2 to 3 years residual effect
COMMENTS: Canada thistle and perennial sowthistle reacted to 2,4-D and MCPA; ester and amine forms of 2,4-D equally effective for sowthistle, while both and MCPA equal for Canada thistle; both herbicides prevent seed production, kill susceptible plants and weaken resistant plants
REFERENCE: Derscheid, L.A., R.L. Nash, and G.A. Wicks, "Thistle Control With Cultivation, Cropping and Chemicals," Weeds 9(1):90-102 (1961).

<1751>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: Effective initial control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1752>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Plants; Lotus (LOTUS PEDUNCULATUS)
EXPERIMENTAL DOSE: 1.1, 2.2, and 3.4 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Tokomaru silt loam, time period--1974 and 1975
EFFECTS: Effective weed control at 3.4 kg/ha with very slight growth reduction of lotus but no adverse effect on yield
COMMENTS: Dinoseb most effective of 6 pre-emergence herbicides tested and 2,4-DB best of 5 postemergence herbicides; crop showed no tolerance towards atrazine, cyanazine, metribuzin, or bentazone
REFERENCE: Ivens, G.W., "Preliminary Evaluation of Pre- and Post-Emergence Herbicides in "Maku" Lotus," Proc. 28th. New Zealand Weed and Pest Cont. Conf. 28:31-34 (1975).

<1753>
CHEMICAL NAME: Butanoic acid, 4-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DB
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preplant non-incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: Moderate control of grasses and effective control of broadleaf weeds with moderate damage of soybean and no damage of cotton or corn
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but fairly safe on corn; MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(isopropylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<1754>
CHEMICAL NAME: Butanoic acid, 4-(4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPB
PLANT: Clover, red (TRIFOLIUM PRATENSE)
EXPERIMENTAL DOSE: 1.12 and 1.68 kg/ha
APPLICATION METHODS: Isooctyl ester; postemergence application as spray in 140 l./ha water
EXPERIMENTAL CONDITIONS: Albright-Landry silt loam to clay loam soils; 2 stage applications for 2 years--beginning of spring growth (stage 1) and when crop was 7.5--10 cm high (stage 2); split plot design with 6 replications; seed yields determined by harvesting strips from herbicide subplots
EFFECTS: 1973--1.12 kg/ha caused very slight flowering delay at stage 1 and slight to moderate delay at stage 2, 1.68 kg/ha caused a very slight flowering delay at stage 1 and a moderate delay at stage 2, no significant reduction in yield; 1974--no significant effect on flowering or seed yield at either stage; no significant effect on germination either year
COMMENTS: 1973 growing season had below normal precipitation and early frost and snow that reduced growth vigor; precipitation maintained growth vigor during 1974 growing season
REFERENCE: Darwent, A.L. and P. Pankiw, "Effects of Several Herbicides on Red Clover Seed Production," Can. J. Plant Sci. 56:413-415 (1976).

<1755>
CHEMICAL NAME: Butanoic acid, 4-(4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPB
PLANT: Clover, Egyptian (TRIFOLIUM ALEXANDRINUM); Plants
EXPERIMENTAL DOSE: 6.5 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; time period--1973 and 1974
EFFECTS: Moderate weed control and reduce yield of berseem
COMMENTS: Stale seed-bed prepared by desiccation of weed seedlings with paraquat day before planting berseem and pre-planting incorporation of EPTC both effective in significantly reducing weed growth and boosting yields of berseem; berseem seeds coated with activated carbon before planting provided appreciated protection to corp against EPTC, but NA stunted berseem growth
REFERENCE: Gupta, O.P. and N.M. Bacchawat, "Weed Control in Berseem Using Stale Seed-Bed, EPTC, and MCPB," PANS 22(3):386-390 (1976).

<1756>
CHEMICAL NAME: Butanoic acid, 4-(4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPB
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS); Ladysthumb (POLYGONUM PERSICARIA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1.1 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Plano silt loam; visual estimates of weeds; evaluation time--about 2 mos. (at harvest)
EFFECTS: Moderate control of broadleaf weeds; poor control of grasses; epinasty of pea plants
COMMENTS: Of six herbicides evaluated, propachlor and a combination of dalapon and MCPB provided most effective control of annual weeds with least risk of pea crop injury
REFERENCE: Harvey, R.G., E.T. Gritton, and R.E. Doersch, "Effects of Selected Herbicides on Annual Weed Control and Production of Processing Peas," Agron. J. 64(1):812-815 (1972).

<1757>
CHEMICAL NAME: Butanoic acid, 4-(4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPB
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preplant non-incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: At 2.0 lb/A, moderate control of grasses and effective control of broadleafs with slight damage of cotton and corn and no damage of soybean
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but

<1757>
<1757> CONT.
fairly safe on corn; MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(isopropylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<1758>
CHEMICAL NAME: Butanoic acid, 4-(4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPB
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 2.0 to 10.0 lb/A; sodium salt
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Killed at 5.0 lb/A
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most common phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<1759>
CHEMICAL NAME: Butanoic acid, 4-(4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPB
PLANT: Plants; Lotus (LOTUS PEDUNCULATUS)
EXPERIMENTAL DOSE: 1.1, 2.2, and 3.4 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Tokomaru silt loam, time period--1974 and 1975
EFFECTS: Moderate weed control at 2.2 kg/ha with no adverse effect on lotus
COMMENTS: Dinoseb most effective of 6 pre-emergence herbicides tested and 2,4-DB best of 5 postemergence herbicides; crop showed no tolerance towards atrazine, cyanazine, metribuzin, or bentazone
REFERENCE: Ivens, G.W., "Preliminary Evaluation of Pre- and Post-Emergence Herbicides in "Maku" Lotus," Proc. 28th. New Zealand Weed and Pest Cont. Conf. 28:31-34 (1975).

<1760>
CHEMICAL NAME: Butanoic acid, 4-oxo-4-(1-pyrrolidinylamino)-
CHEMICAL COMMON NAME: F 529
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.25% (2 sprays)
APPLICATION METHODS: Foliar spray to run-off
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Growth retardation with delayed flowering
COMMENTS: Flowering delay caused by aminozide and F 529 formulations exceeded that by phosfon 1.5 added to compost at a rate giving comparable height control; Alar 85 and B-Nine, applied at an identical rate in terms of aminozide content, equally effective and not phytotoxic
REFERENCE: Maw, G.A., "4. Crop Protection," Glasshouse Crops Res. Inst. Rept. 1970:84-98 (1971).

<1761>
CHEMICAL NAME: Butanoic acid, 4-phenyl-
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 50 ppm
EXPERIMENTAL CONDITIONS: Isolated from decomposing plant matter
EFFECTS: Inhibition of seedling root elongation
COMMENTS: Phytotoxin production and analysis--main emphasis of paper
REFERENCE: Toussoun, T.A., A.R. Weinhold, R.G. Linderman, and Z.A. Patrick, "Nature of Phytotoxic Substances Produced during Plant Residue Decomposition in Soil," Phytopathol. 58:41-45 (1968).

<1762>
CHEMICAL NAME: C 1100
CHEMICAL COMMON NAME: C-1100
PLANT: Maple, sugar (ACER SACCHARUM); Privet (LIGUSTRUM OBTUSIFOLIUM); Lilac (SYRINGA sp.); Hydrangea (HYDRANGEA sp.); Honeysuckle (LONICERA sp.); Red willow (CORNUS AMOMUM); Smoke-tree (COTINUS COGGYGRIA); Arrow-wood (VIBURNUM DILATATUM); Yellowwood (CLADRASTIS LUTEA); Spiraea, false (SORBARIA SORBIFOLIA); Spindle-tree (EUONYMUS BUNGEANUS); Horsechestnut (AESCULUS PARVIFLORA)
EXPERIMENTAL DOSE: 3% solution
APPLICATION METHODS: Solutions formulated with relatively non-phytotoxic Sovaspray 100 as carrier and commercial xylene as co-solvent; mist applied to point of drip off on both leaf surfaces
EXPERIMENTAL CONDITIONS: Acaricides--diluted 1 part acaricide concentrate to 4 parts carrier to give 3% toxicant formulation; insecticides--diluted 1 part concentrate to 4 parts carrier to give 5% toxicant formulation; concentrates formed by dissolving acaricides and insecticides in xylene; July and August treatments
EFFECTS: Moderate injury--A. SACCHARUM, LONICERA spp., C. COGGYGRIA, V. DILATATUM, C. LUTEA; slight injury to other species
COMMENTS: Compound 923--acaracide
REFERENCE: Clower, D.F. and J.G. Matthysse, "Phytotoxicity of Insecticides in Mist Concentrate Type Formulations," J. Econ. Entomol. 47(5):735-738 (1954).

<1763>
CHEMICAL NAME: C 15935
CHEMICAL COMMON NAME: C-15935
PLANT: Beet, sugar (BETA VULGARIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, green (SETARIA VIRIDIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PENSYLVANICUM); Buckwheat, wild (POLYGONUM CONVOLVULUS); Mustard, wild (BRASSICA KABER); Stinkweed (THLASPI ARVENSE)
EXPERIMENTAL DOSE: 1.25 lb/A
APPLICATION METHODS: Preemergence; 25% WP formulation
EXPERIMENTAL CONDITIONS: 12 treatments per trial, each trial replicated 8 times; 4 row wide plots, 50 ft. long--row 1 was untreated check, row 2 had herbicide plus hand weeding, row 3 received preemergence TCA at 8 lb/A and row 4 was same as row 2 except delayed hand weeding; visual ratings
EFFECTS: Moderate crop tolerance; good control of barnyard grass; moderate foxtail control; poor control of pigweed and lambsquarters; moderate control of other species
REFERENCE: Klassen, M. and G. Guccione, "Evaluation of Herbicides for Weed Control in Sugarbeets in Manitoba," J. Amer. Soc. Sugar Beet. Technol. 16(7):553-560 (1971).

<1764>
CHEMICAL NAME: C 285
CHEMICAL COMMON NAME: C-285
PLANT: Plants; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 1.0 kg/ha; G
APPLICATION METHODS: Broadcast (G) and spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control and increased rice yield
COMMENTS: 2,4-D and MCPA equally effective in controlling barnyard grass and other annual weeds in transplanted rice; yields significantly increased in nearly all applications; for direct-seeded flooded rice, granular formulations of several new herbicides, such as butachlor, benthiocarb and C-288 highly selective in controlling barnyardgrass and other annual weeds under tropical conditions
REFERENCE: De Datta, S.K., "Chemical Weed Control in Tropical Rice in Asia," PANS 28(4):433-440 (1972).

<1765>
CHEMICAL NAME: C 288
CHEMICAL COMMON NAME: C-288
PLANT: Plants; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 1.0 kg/ha; G
APPLICATION METHODS: Broadcast (G) and spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control and increased rice yield
COMMENTS: 2,4-D and MCPA equally effective in controlling barnyard grass and other annual weeds in transplanted rice; yields significantly increased in nearly all applications; for direct-seeded flooded rice, granular formulations of several new herbicides, such as butachlor, benthiocarb and C-288 highly selective in controlling barnyardgrass and other annual weeds under tropical conditions
REFERENCE: De Datta, S.K., "Chemical Weed Control in Tropical Rice in Asia," PANS 28(4):433-440 (1972).

<1766>
CHEMICAL NAME: C-10725
CHEMICAL COMMON NAME: C-10725
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Fair sesame tolerance and poor barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<1767>
CHEMICAL NAME: C-288
CHEMICAL COMMON NAME: C-288
PLANT: Junglerice (ECHINOCHLOA COLONUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rice (ORYZA SATIVA); Bermudagrass, common (CYNODON DACTYLON); Wiregrass (ELEUSINE INDICA); Celosia (CELOSIA ARGENTEA); Purslane, sea- (TRIANTHEMA PORTULACASTRUM); Sensitive-plant (MIMOSA PUDICA); (ACANTHESPERMA HISPIDIA)
EXPERIMENTAL DOSE: 2 kg/ha
APPLICATION METHODS: Treatment 15 days after sowing; liquid formulations
EXPERIMENTAL CONDITIONS: Sandy loam soil; randomized block design with 3 replications; plots, 15 sq m; one-half of each plot treated, other half not treated; ground fertilized; weeds from sampling area within each plot of 7,500 sq cm counted at 14, 25, 42, and 82 days after rice emergence(DARE)
EFFECTS: 93% or better weed control up to 25 DARE; 95% weed control at 42 DARE; 77% weed control at 82 DARE; no rice plant injury
COMMENTS: For tabulations, weeds not listed by species
REFERENCE: Gunasena, H.P.M. and H.W. Kannangara, "Evaluation of Herbicides for Rain-Fed Upland Rice," J. Nat. Sci: Counc. Sri Lanka 24(2):161-164 (1974).

<1768>
<1768>
CHEMICAL NAME: Cadmium chloride
CHEMICAL COMMON NAME: Cd Cl(2)
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 0.1, 0.5, 2.0, 10.0, and 50.0 ppm
APPLICATION METHODS: Solution addition to sand
EXPERIMENTAL CONDITIONS: Environmental chamber; pot culture in quartz sand; RH-70%; day temperature--18 to 22 C; photoperiod--16 hr; dark temperature--13 to 17 C; nutrient solution addition
EFFECTS: Growth reduction and other phytotoxic symptoms occurred in 9 lettuce varieties with considerable variability and with considerable differences in Cd uptake
COMMENTS: Differential tolerance of varieties to phytotoxicity was not readily visible but a significant interaction of substrate Cd and variety was obtained for dry matter yields; significant interactions indicated that response of tissue Cd concentration, total plant Cd uptake, and translocation of Cd to the edible leaf portion were dependent on variety as well as substrate Cd; evidence that Cd uptake and translocation are genetically controlled warrants the selection of varieties that assimilate the least Cd and translocate the least to the plant part used for human or animal consumption
REFERENCE: John, M.K. and C.D. VanLaerhoven, "Differential Effects of Cadmium on Lettuce Varieties," Envir. Pollut. 10(3):163-175 (1976).

<1769>
CHEMICAL NAME: Cadmium chloride
CHEMICAL COMMON NAME: Cd Cl(2)
PLANT: Radish (RAPHANUS SATIVUS); Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 50 mg/pot (100 ppm-soil concentration)
APPLICATION METHODS: Solution addition to soil
EXPERIMENTAL CONDITIONS: Environmental chamber; soils--30 types; temperature--13-22 C; Hoaglands nutrient solution; photoperiod--16 hr; RH-70%; evaluation time--3 wk; pot culture; 500 g soil/pot
EFFECTS: Shoot and root yields of radish were significantly reduced and leaf chlorosis evident; lettuce yields were not significantly decreased
COMMENTS: Cadmium may readily be taken up from the soil and may result in potentially hazardous accumulation of cadmium in plants; besides its effect on the cadmium levels, the treatment produced toxicity symptoms and reduced yields; cadmium content of plant parts was related to amounts of exchangeable cadmium in the contaminated soil rather than to total amounts of cadmium added to the soil
REFERENCE: John, M.K., C.J. VanLaerhoven, and H.H. Chuah, "Factors Affecting Plant Uptake and Phytotoxicity of Cadmium Added to Soils," Envir. Sci. Technol. 6(12):1005-1009 (1972).

<1770>
CHEMICAL NAME: Calcium arsenide
CHEMICAL COMMON NAME: Tricalcium arsenate
PLANT: Crabgrass (DIGITARIA sp.); Bentgrass (AGROSTIS sp.); Bluegrass, Kentucky (POA PRATENSIS); Fescue (FESTUCA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Clover, white (TRIFOLIUM REPENS)
EXPERIMENTAL DOSE: 10.0 lb/100 sq ft
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate crabgrass control and affected turfgrasses (slight to moderate damage) and clover
COMMENTS: Where applied to greenhouse flats immediately after seeding rows of turfgrasses and crabgrasses, chemicals allowed turfgrass seeds to sprout and grow normally while crabgrass died within few day after sprouting
REFERENCE: Gallagher, J.E. and R.J. Otten, "New Organic Arsenical Materials for Pre-Emergence Crabgrass Control," Hormolog. 3(1):11-13 (1961).

<1771>
CHEMICAL NAME: Carbamate, (1-chloropropyl-2)-N-(3-chlorophenyl)-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1772>
CHEMICAL NAME: Carbamate, (1-methylpropyl)-N-(3-chlorophenyl)-
CHEMICAL COMMON NAME: CSBC
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 4.11 to 4.65 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<1773>
CHEMICAL NAME: Carbamate, acetoxime-N-phenyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1774>
CHEMICAL NAME: Carbamate, alpha-carbo-(2,4-dichlorophenoxyethoxy)ethyl-N-phenyl-
CHEMICAL COMMON NAME: No. 499
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 5.75 to 3.70 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<1775>
CHEMICAL NAME: Carbamate, beta-cyanoethyl-N-phenyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1776>
CHEMICAL NAME: Carbamate, ethyl-N,N-di-n-propylthiol-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1777>
CHEMICAL NAME: Carbamate, ethylethyl-n-butylthiol-
CHEMICAL COMMON NAME: Ethyl ethyl-n-butylthiolcarbamate
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-4) M, 10(-5) M, 10(-6) M, and 10(-7) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-4) M; moderate control at 10(-5) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1778>
<1778>
CHEMICAL NAME: Carbamate, isopropyl-N-(3-methylphenyl)-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1779>
CHEMICAL NAME: Carbamate, n-propyl-N-ethyl-N-butylthiol-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: Moderate control of sago pondweed initially at 20.0 lb rate with no control of American pondweed
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1780>
CHEMICAL NAME: Carbamate, sec-butyl-N-(3-chlorophenyl)-
CHEMICAL COMMON NAME: Sec-butyl N-(3-chlorophenyl)carbamate
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1781>
CHEMICAL NAME: Carbamate, 2-chloroethyl-N-(3-chlorophenyl)-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1782>
CHEMICAL NAME: Carbamate, 2-chloroethyl-N-2-methyl-5-chlorophenyl
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1783>
CHEMICAL NAME: Carbamate, 2-propynyl-N-(3-chlorophenyl)-
CHEMICAL COMMON NAME: CPYC
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 4.11 to 4.20 (negative log) M

<1783> CONT.
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<1784>
CHEMICAL NAME: Carbamate, 2,3,3-trichloroallyldiisopropylthiol-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1785>
CHEMICAL NAME: Carbamate, 2,4-ar-trichlorobenzyldiisopropyldithio-
CHEMICAL COMMON NAME: CP9025
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 3.70 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<1786>
CHEMICAL NAME: Carbamate, 5-butyldi-n-propylthio-
CHEMICAL COMMON NAME: R-1876
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-4) M, 10(-5) M, and 10(-6) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Moderate control of shoot behavior at 10(-4) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1787>
CHEMICAL NAME: Carbamic acid-, iso-propyl ester
PLANT: Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 30-50 mg/sq ft
APPLICATION METHODS: Mid-May application as ears were appearing
EFFECTS: Fully formed heads containing no grain
COMMENTS: N-Butyl phenylcarbamate, ethyl O-methoxyphenylcarbamate, methyl phenylthiocarbamate, ethyl phenyl thiocarbamate, N-propyl phenylcarbamate, ethyl O-chlorophenylcarbamate, methyl phenylcarbamate, allyl phenylcarbamate, and N, N-di(carboethoxyaniline) activity also reported but no specific concentrations given; action of arylcarbamic esters on monocotyledonous plants and lack of action on dicotylledonous plants noted
REFERENCE: Templeman, W.G., and W.A. Sexton, "Effect of Some Arylcarbamic Esters and Related Compounds Upon Cereals and Other Plant Species," Nature 156:630 (1945).

<1788>
CHEMICAL NAME: Carbamic acid, (1,1-dimethylethyl)-, 3-[[(dimethylamino)carbonyl]-amino]phenyl ester
CHEMICAL COMMON NAME: Karbutilate
PLANT: Plants
EXPERIMENTAL DOSE: 5, 10, and 20 lb/A
APPLICATION METHODS: Hand broadcast (G and pellets) or sprayed postemergence (WP); 50% G and 80% WP formulations
EXPERIMENTAL CONDITIONS: Field study; old-field test sites

<1788>
<1788> CONT.
EFFECTS: Effective control of weeds at highest rate; G formulation generally more effective than WP
COMMENTS: Total vegetation control of all species increased directly with increased rate of herbicide; most complete control occurred with bromacil, karbutilate, and picloram plus diuron.
REFERENCE: Shipman, R.D., "Soil-Applied Herbicides in the Control of Native Broadleaf Weeds and Grasses," Proc. Northeast. Weed Sci. Soc. 28:331-334 (1974).

<1789>
CHEMICAL NAME: Carbamic acid, (1,1-dimethylethyl)-, 3-[[(dimethylamino)carbonyl]-amino]phenyl ester
CHEMICAL COMMON NAME: Karbntilate
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect noted
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1790>
CHEMICAL NAME: Carbamic acid, (1,1-dimethylethyl)-, 3-[[(dimethylamino)carbonyl]-amino]phenyl ester
CHEMICAL COMMON NAME: Karbutilate
PLANT: Cogongrass (IMPERATA CYLINDRICA)
EXPERIMENTAL DOSE: 5.6, 11.2, and 22.4 kg/ha
APPLICATION METHODS: Postemergence spray; 300 l./ha; 0.5% surfactant
EXPERIMENTAL CONDITIONS: Field study; pure cogongrass stands in near-dormant state; time period--1971 and 1972
EFFECTS: Effective control at two highest rates; regrowth after one year
COMMENTS: All soil sterilants provided acceptable control; single applications of TCA and dalapon controlled cogongrass without prolonged soil sterility
REFERENCE: Dickens, R. and G.A. Buchanan, "Control of Cogongrass with Herbicides," Weed Sci. 23(3):194-197 (1975).

<1791>
CHEMICAL NAME: Carbamic acid, (1,1-dimethylethyl)-, 3-[[(dimethylamino)carbonyl]-amino]phenyl ester
CHEMICAL COMMON NAME: Karbutilate
PLANT: Paragrass (PANICUM PURPURASCENS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 6.0 lb/A; 80% WP
APPLICATION METHODS: Postemergence spray; 25 gal/A; up to three repeat applications
EXPERIMENTAL CONDITIONS: Field study; soil--Humatas clay loam; evaluation time--up to 20 wk; clipped or non-clipped paragrass plots treated; combined applications
EFFECTS: Slight to moderate control of paragrass (only single applications investigated) at 6.0 lb/A
COMMENTS: Spray applied to regrowth generally gave better control for longer periods; best control obtained with dalapon + TCA applied twice; low rate initially and one-half rate at repeat application fully as effective as higher rate tested; dalapon alone nearly as effective as dalapon + TCA combination on both older growth and regrowth
REFERENCE: Whitney, A. S., A. V. Ramos, and A. S. Rios, "Chemical Control of Paragrass (BRACHIARIA MUTICA) in a Humid Upland Area," J. Agr. Univ. P. R. 57(2):129-135 (1973).

<1792>
CHEMICAL NAME: Carbamic acid, (1,1-dimethylethyl)-, 3-[[(dimethylamino)carbonyl]-amino]phenyl ester
CHEMICAL COMMON NAME: Karbutilate
PLANT: Bromegrass, smooth (BROMUS INERMIS); Grama, sideoats (BOUTELOUA CURTIPENDULA); Indian grass (SORGHASTRUM NUTANS); Switchgrass (PANICUM VIRGATUM); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 4.5, 9.0, and 17.9 kg/ha
APPLICATION METHODS: Postemergence spray; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Sharpsburg silty clay loam; forage grasses treated and soil at different depths (0-8, 8-15, and 15-30 cm) removed at different times (4 and 16 mos) for greenhouse bioassay using soybean
EFFECTS: Generally moderate to severe growth reduction of soybean for up to 16 mos at two highest rates with injury to smooth brome at all rates, to sideoats gram at 9.0 and 17.0 kg/ha and no injury to remaining grasses
COMMENTS: Most herbicide residues 4 or 16 months after application located in the 0- to 8-cm soil depth; only bromacil, or terbacil at high rates depressed soybean growth in soil from the 8- to 15-cm depth
REFERENCE: Morrow, L.A. and M.K. McCarty, "Selectivity and Soil Persistence of Certain Herbicides Used on Perennial Forage Grasses," J. Envir. Qual. 5(4):462-465 (1976).

<1793>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methyl-2-propynl ester, mixt. with N'-cyclooctyl-N-N-dimethylurea
CHEMICAL COMMON NAME: Alipur
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Oat (AVENA SATIVA); Oat (AVENA SATIVA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3.0 and 6.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; time period--1962 to 1964; residue effect on subsequent crops (oats and soybean) studied after one and two years
EFFECTS: Moderate weed control with no adverse effect on asparagus and slight growth reduction of oats and

<1793> CONT.
soybean
COMMENTS: Simazine most effective for controlling annual weed species in asparagus; linuron, diphenamid, monuron, and DCPA controlled weed species; other herbicides tested less effective
REFERENCE: Sandhu, S.S. and J.K. Greig, "Effects of Herbicides on Asparagus and Weeds, and Residues Retained in the Soil," Am. Soc. Hort. Sci. 88:372-377 (1966).

<1794>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
PLANT: Goosegrass (ELEUSINE INDICA); Love-grass (ERAGROSTIS PECTINICEA); Nutsedge, purple (CYPERUS ROTUNDUS); Pigweed, spiny (AMARANTHUS SPINOSUS); Apple of Peru (NICANDRA PHYSOLODES); Purslane, common (PORTULACA OLERACEA); Floras paintbrush (EMILIA SONCHIFOLIA); Spurge, garden (EUPHORBIA HIRTA); Cabbage (BRASSICA OLERACEA); Cabbage, Chinese (BRASSICA PEKINENSIS); Mustard, Chinese (BRASSICA JUNCEA); Mustard, cabbage (BRASSICA CHINENSIS); Radish (RAPHANUS SATIVUS); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective control of all weeds except pigweed (slight control) with moderate to severe damage to crop plants
COMMENTS: Vegadex (CDEC) and treflan (trifluralin) suitable herbicides while dymid very toxic to crop; selectivity not due to a single factor but an interaction of morphological, physiological and genetical factors which made particular crop tolerant or susceptible
REFERENCE: Vahidy, A.A., "Differential Tolerance within Certain Cruciferous Crops to Vegadex, CIPC, Dymid and Treflan," Pak. J. Bot. 5(1):79-85 (1973).

<1795>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chlorpropham
PLANT: Plants; Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Posttransplant (same day)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--aprox. 3 mos
EFFECTS: Moderate control of weeds with no adverse effect on chrysanthum yield
COMMENTS: Excellent weed control obtained with number of herbicides; only R-7465 and diphenamid used as soil surface treatments and bensulide gave unsatisfacotry control; various herbicide treatments found to affect growth of chrysanthemum plants to different degrees
REFERENCE: Welker, W.V. and J.C. Cialone, "An Evaluation of Herbicides for the Control of Weeds in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 26:51-54 (1972).

<1796>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chlorpropham
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS) ; Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Crabgrass, large (DIGITARIA SANGUINALIS); Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Preemergence application with an Oxford Precision Sprayer at a rate of 280 l./ha and at 2 kg/cm2 pressure
EXPERIMENTAL CONDITIONS: Sandy loam soil; spinach plants 10 cm apart in rows 1 m apart; plot - 3 rows 3 m long; 4 replications of each treatment; weeds per 930 cm were counted; plants harvested from center of each plot 37 days after emergence
EFFECTS: Unsatisfactory weed control except for red root pigweed at 1.12 kg/ha and shepherd's purse at 2.24 kg/ha; no significant effect on plant nitrate accumulation
COMMENTS: Increase in plant nitrate can result from soil or lowered nitrate reductase activity; authors think that decrease in some phase of nitrate reduction by herbicide action is responsible for nitrate accumulation
REFERENCE: Cantliffe, D.J. and S.C. Phatak, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Spinach," Hortscience 9(5): 470-472 (1974).

<1797>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chlorpropham
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 8.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 2% EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate overall weed control and control of barnyard grass but effective control of purslane and pigweed with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<1798>
<1798>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Plants
EXPERIMENTAL DOSE: 2.0, 4.0, and 6.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; time period--1967 to 1969; soils--Ramona sandy loam and Greenfield
EFFECTS: Severe damage to asparagus at 4.0 and 6.0 lb/A
COMMENTS: Chemicals which killed or severely damaged asparagus include monuron, diuron, simazine, sinbar, sindone-B, treflan, tenoran, and CIPC; vegiben marginal; of herbicides tested in these trials for pre-emergence weed control in direct-seeded asparagus, balan, bensulide, and brominal offer most promising results
REFERENCE: Whiting, F.L., F.H. Takatori, and J.M. Lyons, "Weed Control in Asparagus," Calif. Agric. 25(1):4-5 (1971).

<1799>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chlorpropham
PLANT: Grasses; Broadleaf weeds; Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Preplant incorporated; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 13 locations in Iowa
EFFECTS: Moderate weed control with no adverse effect on soybean
COMMENTS: Dinitroaniline chemicals applied at proper rates for organic matter levels present provided good to excellent grass control; rate probably more critical for organic matter on BAS-3901, CG-10832 and dinitramine than for trifluralin; organic matter exceedingly critical for nitraline; vernolate provided good grass control and at most locations, better broadleaf control than dinitroaniline chemicals; preplant incorporated plus overlay treatment can increase broadleaf and overall weed control and usually result in less phototoxicity to the crop
REFERENCE: Jennings, V.M., D.W. Staniforth, and W.G. Lovely, "Soybean Herbicide Evaluations Across Iowa in 1973," Proc. N. Cent. Weed Contr. Conf. 28:42-45 (1973).

<1800>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chlorpropham
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-3), 10(-4), and 10(-5)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1801>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chlorpropham
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat, and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--50% or greater inhibition in sorghum, oat, and cucumber at 1 and 10 ppm; shoot--50% or greater inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<1802>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chlorpropham
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bromegrass, smooth (BROMUS INERMIS); Orchard grass (DACTYLIS GLOMERATA); Wheatgrass, crested (AGROPYRON CRISTATUM); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 3.4, 4.5 and 5.6 kg/ha
APPLICATION METHODS: Postemergence application in water at spray volume of 127 l./ha and pressure of 2.1 kg/cm(2) in September
EXPERIMENTAL CONDITIONS: Palouse silt loam; all grasses treated in seedling stage with 1.1 kg/ha bromoxynil to control broadleaf weeds; randomized block experimental design with 3 to 4 replications
EFFECTS: Significant (but only 32%) control of red fescue at 5.6 kg/ha; no significant control of other plants at any rate tested
REFERENCE: Canode, C.L., "Tolerance of Five Cool-Season Perennial Grasses to Selected Herbicides," Agron. J. 66:683-686 (1974).

<1803>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence sprinkle
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Miller Clay; flat culture
EFFECTS: Growth reduction
COMMENTS: Any of chemicals could cause deleterious effects on growth of seedling cotton; UC 21149 employed safely in combination with herbicides Dacthal, diuron, chloro-IPC, and trifluralin
REFERENCE: Boling, J. C. and J. Hacskaylo, "Effect of the Systemic Insecticide UC 21149 and Four Pre-Emergence Herbicides on Cotton Seedlings," J. Econ. Ent. 59(4):1026-1027 (1966).

<1804>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chlorpropham
PLANT: Hyacinth (HYACINTHUS sp.)
EXPERIMENTAL DOSE: 8.0 l./ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--sandy dune; time period--1969 to 1971
EFFECTS: Abnormal growth ("hollow nose") of bulbs on harvest with reduced total weight of bulbs and bulblets
COMMENTS: Malformation in hyacinths, first observed in recent years, found to be effect of uptake by roots of chlorpropham; risk of this malformation even present when normal doses of this compound used for weed killing, especially on sandy soils with very little organic matter
REFERENCE: Muller, P.J. and J. Van der Boon, "Hollow Noses in Hyacinth, a Disorder Caused by the Herbicide Chlorpropham," Neth. J. Pl. Path. 78:198-203 (1972).

<1805>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 8.0 and 16.0 lb/A
APPLICATION METHODS: Preplant non-incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: At 8.0 lb/A, moderate control of grasses and effective control of broadleafs with very slight damage of corn and no damage of cotton or soybean
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but fairly safe on corn; MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(isopropylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<1806>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.0 to 18.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: Effective weed control with no adverse effect on cotton at 9.0 lb/A for 60 day period
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<1807>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
PLANT: Bromegrass, downy (BROMUS TECTORUM); Wheatgrass, intermediate (AGROPYRON INTERMEDIUM); Bluegrass, Kentucky (POA PRATENSIS); Bromegrass, smooth (BROMUS INERMIS)
EXPERIMENTAL DOSE: 2.0 to 8.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 or 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; 2 locations in WA; time period--1958 to 1960
EFFECTS: At 7.0 or 8.0 lb rates, moderate control of downy brome with no injury to wheatgrass, bluegrass, or smooth brome
COMMENTS: IPC and CIPC most effective herbicides for controlling downy brome without serious injury to perennial grasses grown for seed production; endothal gave good downy brome control
REFERENCE: Canode, C.L., W.C. Robocker, and T.J. Muzik, "Grass Seed Production as Influenced by Chemical Control of Downy Brome," Weeds 10(3):216-219 (1962).

<1808>
<1808>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate weed control with no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<1809>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chlorpropham
PLANT: Soybean (GLYCINE MAX); Jimsomweed (DATURA STRAMONIUM)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Preplanting incorporated treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies; Mattapex silt loam; 10 by 20 ft plots, 4 rows of soybeans, 4 replications; spring planting
EFFECTS: Possibility of very minor soybean damage and poor jimsonweed control at both rates
COMMENTS: Combinations of herbicides also tested
REFERENCE: Parochetti, J.V., "Control of Jimsonweed and Three Broadleaved Weeds in Soybeans with Herbicides," Proc. Northeast. Weed Sci. 29:19-25 (1975).

<1810>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chloropropham
PLANT: Sesame (SESAMUM INDICUM); Pigweed (AMARANTHUS sp.); Barley (HORDEUM VULGARE); Millet, Japanese (ECHINOCHLOA FRUMENTACEA)
EXPERIMENTAL DOSE: 3.0 and 4.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley, mustard, and Japanese millet planted as weed crop
EFFECTS: 4 lb/A gave good pigweed and millet control; 3 and 4 lb/A gave good barley control and severe injury to sesame
COMMENTS: Nominal mustard stand even in untreated plots
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<1811>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Onion (ALLIUM CEPA); Tomato (LYCOPERSICON ESCULENTUM); Pepper (CAPSICUM FRUTESCENS); Cucumber (CUCUMIS SATIVUS); Bean, hyacinth (DOLICHOS LAB LAB); Broccoli (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 4.0, 6.0, and 8.0 lb/A; G
APPLICATION METHODS: Preplant incorporated (2 in. depth) by rotary cultivator
EXPERIMENTAL CONDITIONS: Field study; 3 CA locations; furrow irrigation; soils--Moreno fine sandy loam and Ramona sandy loam
EFFECTS: At 4.0 lb/A, effective control of grasses and moderate control of broadleaf weeds with reduced crop emergence and vigor or kill of all crops
COMMENTS: Herbicides for vegetables in three desert areas managed under furrow irrigation exhibited extreme variability between locations in herbicide response and crop toxicity; no treatments provided reasonable compromise between weed control and crop injury at any one location; none met this requirement at each location
REFERENCE: Lyons, J.M. and F.L. Whiting, "Incorporated Preemergence Granular Herbicides on Vegetable Crops," Weeds 13(3):242-245 (1965).

<1812>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chlorpropham
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 10.0 and 20.0 ppm
APPLICATION METHODS: Addition to culture solution
EXPERIMENTAL CONDITIONS: Environmental chamber; hydroponic culture; whole roots or one-third of roots immersed in test solutions; pH--7.0; temperature--16 to 23 C; RH--50 to 70%; photoperiod--12 hr
EFFECTS: Reduced growth
COMMENTS: Propham, chlorpropham, atratone and 2,3,6-TBA killed plants whether application was to one-third or all roots; roots in direct contact with propham, chlorpropham and 2,3,6-TBA deformed or killed, while roots in uncontaminated solution remained healthy; atratone and chlorpropham transmitted to roots not in toxic solution
REFERENCE: Lyndsay, R.V. and G.S. Hartley, "Studies of the Response of Plants to Root-Applied Herbicides," Weed Res. 3(3):195-204 (1963).

<1813>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; vermiculite carrier
APPLICATION METHODS: Broadcast
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate weed control at 8.0 lb/A with no adverse effect on azalea
COMMENTS: PCP, DN, and CIPC superior at high rates against summer weeds in azalea beds, whereas fall weeds best controlled by CIPC, diuron, Geigy 444, and CDEC, no apparent foliar or other damage resulted from any treatments
REFERENCE: Chappell, W.E., "The Use of Granular Herbicides in Azaleas," Proc. Southern Weed Conf. 10:105-107 (1957).

<1814>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.4 to 819.2 ppmw (of soil)
APPLICATION METHODS: Added to soil in water solutions
EXPERIMENTAL CONDITIONS: Greenhouse study; soils--Yolo fine sandy loam, Yolo clay loam, and Egbert loam; persistence studied in container culture in which oats indicator plant was planted, harvested, replanted, etc on 4 to 8 wk cycle
EFFECTS: At 1.6 ppmw or higher concentrations, persisted for 2 or more planting cycles
COMMENTS: Initial toxicity in order of decreasing toxicity was: fenuron and monuron, CIPC, dalapon and TCA, GMIPC, and TBA; comparative inactivation in order of most rapid to slowest inactivation, was; TCA, dalapon, CIPC, CMIPC, TBA, fenuron, and monuron
REFERENCE: Crafts, A.S. and H. Drever, "Experiments with Herbicides in Soils," Weeds 8(1):12-18 (1960).

<1815>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chlorpropham
PLANT: Pigweed (AMARANTHUS sp.); Purslane, common (PORTULACA OLERACEA); Santa Maria (PARTHENIUM HYSTEROPHORUS); (PHYLLANTHUS AMARUS); Wiregrass (ELEUSINE INDICA); Junglerice (ECHINOCHLOA COLONUM); Crabgrass (DIGITARIA INSULARIS); Nutsedge, purple (CYPERUS ROTUNDUS); Cabbage (BRASSICA OLERACEA); Corn (ZEA MAYS); Carrot (DAUCUS CAROTA); Bean, snap (PHASEOLUS VULGARIS); Onion (ALLIUM CEPA); Soybean (GLYCINE MAX); Tomato (LYCOPERSICON ESCULENTUM); Pea, cow- (VIGNA UNQUICULATA); Lettuce (LACTUCA SATIVA); Watermelon (CITRULLUS VULGARIS); Pepper, sweet (CAPSICUM FRUTESCENS); Pepper, hot (CAPSICUM ANNUUM)
EXPERIMENTAL DOSE: 2, 4 and 8 kg/ha
APPLICATION METHODS: Preplanting and preemergence treatments
EXPERIMENTAL CONDITIONS: Loam soil; non-field experiments
EFFECTS: 2 kg/ha--cabbage safe, poor to moderate weed control; 4 kg/ha-- maize, carrot, snapbean, onion, soybean, tomato, and cowpea safe, cabbage, lettuce, watermelon, and pepper unsafe, moderate weed control; 8 kg/ha- maize, carrot, and cowpea safe, snapbean, onion, soybean, and tomato unsafe, moderate weed control
COMMENTS: Cabbage was only crop tested at 2 kg/ha
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<1816>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
PLANT: Goosegrass (ELEUSINE INDICA); Love-grass (ERAGROSTIS PECTINICEA); Nutsedge, purple (CYPERUS ROTUNDUS); Pigweed, spiny (AMARANTHUS SPINOSUS); Apple of Peru (NICANDRA PHYSOLODES); Purslane, common (PORTULACA OLERACEA); Floras paintbrush (EMILIA SONCHIFOLIA); Spurge, garden (EUPHORBIA HIRTA); Cabbage (BRASSICA OLERACEA); Cabbage, Chinese (BRASSICA PEKINENSIS); Mustard (BRASSICA CAMPESTRIS); Mustard, cabbage (BRASSICA CHINENSIS); Radish (RAPHANUS SATIVUS); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; evaluation time--3 and 7 wk; sprinkler irrigation
EFFECTS: Generally slight to moderate control of weeds with moderate to severe damage to crops
COMMENTS: Vegadex and treflan found suitable herbicides while dymid very toxic to crop; selectivity not due to single factor but interaction of morphological, physiological, and genetical factors which made particular crop tolerant or susceptible
REFERENCE: Vahidy, A.A., "Differential Tolerance within Certain Cruciferous Crops to Vegadex, CIPC, Dymid and Treflan," Pak. J. Bot. 5(1):79-85 (1973).

<1817>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
PLANT: Grasses; Broadleaf weeds; Maple, amur (ACER GINNALA); Euonymus, Japanese (EUONYMUS FORTUNEI); Goldenbells (FORSYTHIA INTERMEDIA); Juniper, common (JUNIPERUS COMMUNIS); Pine, red (PINUS RESINOSA); Oak, pin (QUERCUS PALUSTRIS); Rose (ROSA WICHURAIANA); Lilac (SYRINGA VULGARIS); Yew, upright (TAXUS CUSPIDATA); Periwinkle, common (VINCA MINOR)
EXPERIMENTAL DOSE: 6.0 and 12.0 lb/A
APPLICATION METHODS: Postplanting spray; 30 gal/A at 30 lb/sq in
EXPERIMENTAL CONDITIONS: Field study; soil--Stoy silt loam; application one week after planting in winter; time period--1961 and 1962
EFFECTS: Moderate weed control at 3.0 lb/A with moderate damage of ACER, QUERCUS, ROSA, SYRINEA, and VINCA and no or slight damage of EUONYMUS, FORSYTHIA, JUNIPERUS, PINUS, and TAXUS
COMMENTS: Effective weed control, lasting until June of following year obtained with atrazine, CIPC, kloben,

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simazine, lorox, ametryne, and prometryne; atrazine, kloben and simazine gave nearly 100% control; atrazine caused plant injury with more dead plants in treated plots than in control planting; simazine and kloben safer materials
REFERENCE: Sherwood, L.V. and H.R. Kemmerer, "The Influence of Winter Applied Preemergence Herbicides on Weed Growth among Woody Ornamental Plants," Am. Soc. Hort. Sci. 85:657-662 (1964).

<1818>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chloropropham
PLANT: Broadleaf weeds; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Pre-plant incorporated, preemergence, or postemergence sprays; 280 l./ha at 2 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1972 and 1973
EFFECTS: Slight weed control with reduced yield of beet
COMMENTS: Broadleaf weed control achieved in table beets with cycloate, CNP, pebulate, lenacil, pyrazon, IMC 3950, TCA + pyrazon, and pebulate followed by pyrazone; fair weed control achieved with EPTC, propachlor, and solubor; poor weed control obtained from CDEC, chlorpropham, pyrazon, and TCA; yields expressed as $/ha or tons/ha reduced by chlorpropham, lenacil, CNP, and TCA
REFERENCE: Bhatak, S.C. and D.J. Cantliffe, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Table Beets," Hortsci. 10(3):271-273 (1975).

<1819>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
PLANT: Soybean (GLYCINE MAX); Plants
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Preemergence spray; not less than 16 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period -- 1958 and 1959
EFFECTS: Moderate weed control with no adverse effect on soybean yield
COMMENTS: Mixture of CDAA and DNBP consistently gave better control of annual weeds in soybeans than either CIPC, NPA, CDAA or DNBP alone; green foxtail, barnyardgrass, lambsquarters, rough pigweed, purslane, ragweed, field pennycress and wild buckwheat controlled by this mixture; although some varieties of soybeans were more susceptible than others to a distortion of the plumular leaves caused by the CDAA, none permanently injured at rates used
REFERENCE: Hay, J.R., "Pre-Emergence Weed Control in Soybeans with Mixtures of Two Herbicides," Weeds 9(1):117-123 (1961).

<1820>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: CIPC
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preemergence spray; 35 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; soil -- Tifton sandy loam; time period -- 1959 and 1960
EFFECTS: Moderate weed control and moderate damage to peanut but no adverse effect on yield
COMMENTS: Certain mixtures, which contained sesone, 2,1-DEP, or amiben mixed with DNBP, gave seasonal weed control on band-treated peanuts; compared to herbicides applied singly, mixtures not only increased spectrum of weeds controlled but also permitted use of lowest rate of each component on weeds for which it was most effective
REFERENCE: Hauser, E.W., W.C. Shaw, H.F. Harrison, and S.A. Parham, "Herbicides and Herbicide Mixtures for Weed Control in Peanuts," Weeds 10(2):139-144 (1962).

<1821>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Chlorpropham
PLANT: Broadleaf weeds; Grasses; Azalea (RHODENDRON OBTUSUM); Azalea (RHODODENDRON INDICUM); Holly (ILEX CRENATA); Juniper (JUNIPERUS CHINENSIS); Privet, waxy (LIGUSTRUM ACIDUM)
EXPERIMENTAL DOSE: 2.2 and 8.9 kg/ha
APPLICATION METHODS: Incorporated on pine bark then applied as mulch to rooted cuttings; mulch depth--1.27 cm
EXPERIMENTAL CONDITIONS: Shade house; nursery container culture; time period--1970 and 1971
EFFECTS: Effective weed control at higher rate with no adverse effect on ornamentals
COMMENTS: All impregnated mulches except EPTC and diphenamid provided adequate long-season broadleaf weed control; long-season grass weed control acceptable with all herbicide-impregnated mulches except chlorpropham, chlorpropham plus PPG-124, and diphenamid; plant injury appeared on all five species of nursery stock with dichlobenil
REFERENCE: Fretz, T.A., "Herbicide-Impregnated Mulches for Weed Control in Container Nursery Stock," Sci. Hort. 1:165-170 (1973).

<1822>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
CHEMICAL COMMON NAME: Barban
PLANT: Oat, wild (AVENA LUDOVICIANA); Oat, wild (AVENA FATUA);
EXPERIMENTAL DOSE: 2.0 to 20.0 oz/A
APPLICATION METHODS: Preplant spray (triallate), soil incorporation (1 in. depth); postemergence spray (barban)
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Cecilvale; pot culture
EFFECTS: Moderate control of most of wild oat strains (little or no control of two strains) at 10 oz and 20 oz/A
COMMENTS: Two A. FATUA strains had higher tolerance to triallate than three A. LUDOVICIANA strains; reverse

<1822> CONT.
occurred with barban, where grey and brown A. LUDOVICIANA particularly were very resistant; despite kill in some strains with barban, final plant populations as result of tillering generally greater than original
REFERENCE: Watkins, F.B., "Effect of Triallate and Barban on Five Strains of Wild Oat (AVENA Species) from the Darling Downs, Queensland," Queensl. J. Agric. Anim. Sci. 27(1):33-41 (1970).

<1823>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
CHEMICAL COMMON NAME: Barban
PLANT: Couchgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2) M, 10(-3) M, and 10(-4) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3) and 10 (-4) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1824>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
CHEMICAL COMMON NAME: Barban
PLANT: Oat (AVENA SATIVA); Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.4 and 8.0 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture, 11 klux light intensity; 22 C for 16 hr photoperiod; 18 C for dark, soil-sandy loam; field study, soil-silt loam, handweeding; NA (1,8-naphthalic anhydride) used at 0.5 and 1.0% of seed weight as antidote by means of seed coating
EFFECTS: Barban significantly reduced growth of oats and wild oats at both application rates; effect was reversed by NA (1%) for oats but not for wild oats; results in greenhouse were corroborated in field study; similar results for diallate and triallate
COMMENTS: Coating seeds of oats with NA significantly reduced phytotoxicity of barban applied to foliage; protection obtained when barban applied at 0.4 kg/ha, highest rate recommended for control of wild oats
REFERENCE: Chang, F.Y., G.R. Stevenson, G.W. Anderson, and J.D. Bandeen, "Control of Wild Oats in Oats with Barban Plus Antidote," Weed Sci. 22(6):546-548 (1974).

<1825>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
CHEMICAL COMMON NAME: Barban
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat, and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in sorghum, oat, and cucumber at 1 ppm, less than 50% in sorghum and cucumber at 10 ppm but 50% or greater in oat; shoot--less than 50% in sorghum at 10 ppm but 50% or greater in oat
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<1826>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
CHEMICAL COMMON NAME: Barban
PLANT: Oat, wild (AVENA FATUA); Foxtail, green (SETARIA VIRIDIS); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.28 kg/ha
APPLICATION METHODS: Formulation--36% active ingredient; application in 100 l./ha water
EXPERIMENTAL CONDITIONS: Ponoka loam soil, pH 6.6; wheat and barley planted as crops, other plants sown as weeds; treatments applied to wild oats at the 2, 4, and 5-leaf stages
EFFECTS: Barban had no control of foxtail and moderate control of wild oats; no injury to wheat or barley
COMMENTS: Wild oat control was same at 2, 4 and 5-leaf stages
REFERENCE: Friesen, H.A., P.A. O'Sullivan, and W.H. Vanden Born, "HOE 23408, A New Selective Herbicide For Wild Oats and Green Foxtail in Wheat and Barley," Can. J. Plant Sci. 56(3):567-578 (1976).

<1827>
<1827>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
CHEMICAL COMMON NAME: Barban
PLANT: Oat, wild (AVENA FATUA); Flax (LINUM USITATISSIMUM)
EXPERIMENTAL DOSE: 0.35 kg/ha
APPLICATION METHODS: Postemergence; 185 l./ha; pressure--2.1 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--Assiniboine clay loam; pH near neutral; time period--1972 to 1975; evaluation time-4 wk
EFFECTS: Effective control of wild oats with no adverse effect on flax seed yield
COMMENTS: Asulam gave good wild oat control and acceptable control of green foxtail; wild oat control poorer when asulam was combined with other herbicides--on a 3-year average, as compared with asulam alone at equal rates; asulam + MCPA mixture resulted in a greater antagonism and a significant 6% reduction in flax seed yield
REFERENCE: Chow, P.N., "Asulum Mixtures for Weed Control in Flax," Weed Res. 17(1):55-60 (1977).

<1828>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
CHEMICAL COMMON NAME: Barban
PLANT: Oat, wild (AVENA LUDOVICIANA); Foxtail, slender (ALOPECURUS MYOSUROIDES); Wheat (TRITICUM sp.)
EXPERIMENTAL DOSE: 0.35 kg/ha
APPLICATION METHODS: Postemergence spray in 600 l./ha water at a pressure of 2 kg/cm(2); 12.5% EC
EXPERIMENTAL CONDITIONS: Wild oat and foxtail seeded at 4 rates--0, 130, 260, and 390 seeds/m(2); wheat sown at rate of 500 seeds/m(2); split plot design with 4 replications, herbicides were subplots and the weed populations the plots
EFFECTS: Wild oat--mean dry weight of 5.5 g/ha compared to mean of check of 101.8 g/ha; foxtail--mean dry weight of 16.1 g/ha, check dry weight of 21.7 g/ha; wheat--grain yield 31.8 g/ha compared to 20.6 g/ha for check
COMMENTS: Check was sown the same as treated plots; effectiveness against wild oat decreased as infestation increased
REFERENCE: Catizone, P., "Trials on Wild Oat (AVENA LUDOVICIANA, DURIEU) Control in Winter Wheat Comparing New Herbicides," Proc. Brit. Weed Control Conf. 12:45-52 (1974).

<1829>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
CHEMICAL COMMON NAME: Barban
PLANT: Oat, wild (AVENA FATUA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.3 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays; 20 gal/A at 32 lb/sq in; and broadcast (G)
EXPERIMENTAL CONDITIONS: Field study; 13 sites in Britain; time period--1970-1972
EFFECTS: In post-emergence application, moderate control of A. FATUA with no adverse effect on wheat
COMMENTS: Best control obtained from pre-emergence tri-allate granules and chlortoluron, and late post-emergence benzoylprop-ethyl; all treatments tended to perform less well at highest weed populations; good yield responses obtained
REFERENCE: Proctor, J.M. and D.P. Livingston, "Chemical Control of AVENA FATUA in Winter Wheat," Proc. 11th. Br. Weed Cont. Conf. 11(1):288-293 (1972).

<1830>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
CHEMICAL COMMON NAME: Barban
PLANT: Barley (HORDEUM VULGARE); Oat, wild (AVENA FATUA); Wheat (TRITICUM AESTIVUM); Flax (LINUM USITATISSIMUM)
EXPERIMENTAL DOSE: 4.0, 8.0, and 16.0 oz/A
APPLICATION METHODS: Postemergence spray; 6.5, 30.0, or 56.0 gal/A at 30 psi
EXPERIMENTAL CONDITIONS: Greenhouse and field experiments; time period--1959 and 1960
EFFECTS: Effective wild oat control at 8.0 and 16.0 oz/A with reduced barley yield (greenhouse), and in field no adverse effect on yield of wheat and flax
COMMENTS: Wild oats control decreased with increasing plant age; reduction in number of wild oats plants greatest, when barban sprayed at 8 and 16 oz/A; development of surviving plants delayed and tillering greatly suppressed; dry weight of treated wild oats significantly below that of untreated plants; with exception of barban at 16 oz/A in 1960, these treatments resulted in significant increases in yield of wheat
REFERENCE: Friesen, H.A., "Some Factors Affecting the Control of Wild Oats With Barban," Weeds 9(2):185-194 (1961).

<1831>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
CHEMICAL COMMON NAME: Carbyne
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Postplanting spray; 30 gal/A at 30 lb/sq in
EXPERIMENTAL CONDITIONS: Field study; soil--Stoy silt loam; application one week after planting in winter; time period--1961 and 1962
EFFECTS: Slight weed control
COMMENTS: Effective weed control, lasting until June of following year obtained with atrazine, CIPC, kloben, simazine, lorox, ametryne, and prometryne; atrazine, kloben and simazine gave nearly 100% control; atrazine caused plant injury with more dead plants in treated plots than in control planting; simazine and kloben safer materials
REFERENCE: Sherwood, L.V. and H.R. Kemmerer, "The Influence of Winter Applied Preemergence Herbicides on Weed Growth among Woody Ornamental Plants," Am. Soc. Hort. Sci. 85:657-662 (1964).

<1832>
CHEMICAL NAME: Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
CHEMICAL COMMON NAME: S-847
PLANT: Oat, wild (AVENA FATUA); Buckwheat, wild (POLYGONUM CONVOLVULUS); Oat (AVENA SATIVA); Caragana; Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Barley (HORDEUM VULGARE); Bromegrass, smooth (BROMUS INERMIS); Onion (ALLIUM CEPA); Candytuft (IBERIS AMARA); Radish (RAPHANUS SATIVUS); Mustard (BRASSICA sp.); Millet, foxtail (SETARIA ITALICA); Foxtail, yellow (SETARIA GLAUCA); Wheat (TRITICUM AESTIVUM); Foxtail, green (SETARIA VIRIDIS); Crabgrass, large (DIGITARIA SANGUINALIS); Crabgrass, hairy (DIGITARIA SANGUINALIS); Rye (SECALE CEREALE); Leek (ALLIUM PORRUM); Corn (ZEA MAYS); Beet, sugar (BETA VULGARIS); Spinach (SPINACIA OLERACEA); Four-o-clock (MIRABILIS JALAPA); Sweet william (DIANTHUS BARBATUS); Kochia (KOCHIA SCOPARIA); Pinks (DIANTHUS PLUMARIUS); Lamb's-quarters (CHENOPODIUM ALBUM); Carnation; Larkspur (DELPHINIUM BARBEYI); Paspalum grass (PASPALUM sp.); Allysum, sweet (LOBULARIA MARITIMA); Turnip (BRASSICA RAPA); Brussels sprouts (BRASSICA OLERACEA); Kohlrabi (BRASSICA OLERACEA); Wallflower (CHEIRANTHUS CHEIRI); Pennycress, field (THLASPI ARVENSE); Soybean (GLYCINE MAX); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Alfalfa (MEDICAGO SATIVA); Pea, sweet (PISUM SATIVUM); Cauliflower (BRASSICA OLERACEA); Broccoli (BRASSICA OLERACEA); Collards (BRASSICA OLERACEA); Mustard, wild (BRASSICA KABER); Flax (LINUM USITATISSIMUM); Bean, snap (PHASEOLUS VULGARIS); Nasturtium (TROPAEOLUM MINUS); Bean, hyacinth (DOLICHOS LAB LAB); Radish (RAPHANUS SATIVUS); Patient Mary (IMPATIENS SULTANI); Balsam (IMPATIENS BALSAMINA); Cotton (GOSSYPIUM HIRSUTUM); Pansy (VIOLA TRICOLOR); Velvetleaf (ABUTILON THEOPHRASTI); Okra (HIBISCUS ESCULENTUS); Godetia (GODETIA sp.); Clarkia (CLARKIA sp.); Parsnip (PASTINACA SATIVA); Carrot (DAUCUS CAROTA); Morningglory (IPOMOEA sp.); Butterfly flower (SCHIZANTHUS HYBRIDUS); Phlox (PHLOX sp.); Salvia (SALVIA SPLENDENS); Verbena (VERBENA HYBRIDA); Tomato (LYCOPERSICON ESCULENTUM); Nicotiana (NICOTIANA sp.); Petunia (PETUNIA sp.); Foxglove (DIGITALIS PURPUREA); Snapdragon (ANTIRRHINUM MAJUS); Scabiosa (SCABIOSA ATROPURPUREA); Pumpkin (CUCURBITA PEPO); Squash, winter (CUCURBITA MAXIMA); Cucumber (CUCUMIS SATIVUS); Lettuce (LACTUCA SATIVA); Lobelia (LOBELIA sp.); African daisy (DIMORPHOTHECA sp.); Squash, winter (CUCURBITA MOSCHATA); Sunflower (HELIANTHUS sp.); Calendula (CALENDULA OFFICINALIS); Marigold, French (TAGETES PATULA); Aster (ASTER sp.); Cosmos (COSMOS BIPINNATUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Zinnia (ZINNIA ELEGANS); Bachelor's button (CENTAUREA CYANUS); Ageratum (AGERATUM HOUSTONICANUM)
EXPERIMENTAL DOSE: 0.125 to 2.0 lb/A; EC; Velsicol AR-50 G carrier and Atlox 2081 emulsifying agent
APPLICATION METHODS: Foliar spray; 5 to 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; temperatures-- 60 F (night) and 70 to 80 F (day)
EFFECTS: Control or kill of oats, wild oats, wild buckwheat, smartweed, and portulaca at 0.125 to 1.0 lb/A with many plants being resistant (minor effects at 2.0 lb/A rate)
COMMENTS: Controls wild oats at lower rates and over longer time interval when wild oats growing rapidly as result of high fertilizer rates; heavy fertilization resulted in greater percentage of wheat in treated mixtures of wheat and wild oats; effectiveness for control of oats or wild oats inversely related to spray volume; effect not consistent under all conditions of testing
REFERENCE: Hoffman, O.L., J.W. Pullen, J.R. Epperly, and T.R. Hopkins, "Factors Affecting the Activity of 4-chloro-2-butynyl N-(3-chlorophenyl)carbamate as a Selective Herbicide," Weeds 8(2):198-203 (1960).

<1833>
CHEMICAL NAME: Carbamic acid, (3-methylphenyl)-, 3-[(methoxycarbonyl)amino]phenyl ester
CHEMICAL COMMON NAME: Phenmedipham
PLANT: Grasses; Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/A
APPLICATION METHODS: Postemergence treatment 26 days after planting
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared the following April; single row plots, 3 by 26 ft; treatments randomized in each of 8 blocks; 15 ft of row from each plot harvested July 16; non-treated plot--43 plants harvested
EFFECTS: Good grass, lambsquarter and ragweed control at both rates; beets harvested--92 plants at 1.5 lb/A and 110 plants at 3.0 lb/A
COMMENTS: Slightly better weed control at 1.5 lb/A; phenmedipham and desmedipham best for weed control of herbicides tested; phenmedipham in combination with other herbicides also reported
REFERENCE: Noll, C.J., "Weed Control in Beets with Herbicides," Proc. Northeast. Weed Sci. Soc. 31:244-246 (1977).

<1834>
CHEMICAL NAME: Carbamic acid, (3-methylphenyl)-, 3-[(methoxycarbonyl)amino]phenyl ester
CHEMICAL COMMON NAME: Phenmedipham
PLANT: Beet, sugar (BETA VULGARIS); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preemergence spray; 20 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Newport type; time period--1970 to 1972
EFFECTS: Moderate, variable weed control with no adverse effect on sugar beet
COMMENTS: Pyrazone and lenacil caused temporary loss of vigour in beet seedlings, did not reduce seedling number or affect final yield; margin of safety with these materials not large, dosage rates 25 percent in excess of the recommended rate tolerated even in two seasons when very wet weather followed herbicide application; both materials gave good weed control in wet spring and were less active in a dry spring; in dry conditions, lenacil appeared to retain more activity than pyrazone
REFERENCE: Short, J.L., "The Use of Sugar Beet Herbicides on Sandy Soils," Proc. 11th. British Weed Cont. Conf. 2:499-504 (1972).

<1835>
CHEMICAL NAME: Carbamic acid, (3-methylphenyl)-, 3-[(methoxycarbonyl)amino]phenyl ester
CHEMICAL COMMON NAME: Phenmedipham
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 1 and 2 kg/ha
APPLICATION METHODS: Postemergence spray at volume rate of 225 l./ha and pressure of 2.1 kg/cm (2)
EXPERIMENTAL CONDITIONS: Greenhouse study; plants watered from above before spraying and from below after spraying; 2 replications; visual assessments at intervals, dry weights determined 8 weeks after spraying

<1835>
<1835> CONT.
EFFECTS: Chlorotic patches on youngest expanded leaves within 2 weeks; these leaves became necrotic at 2 kg/ha; normal regrowth; significant reduction in dry weight at 2 kg/ha compared with control
COMMENTS: Another experiment showed similar results
REFERENCE: Clay, D.V., "The Response of Strawberry to a Range of Foliage Acting Herbicides," Proc. Brit. Weed Control Conf. 11:409-416 (1972).

<1836>
CHEMICAL NAME: Carbamic acid, (3-methylphenyl)-, 3-[(methoxycarbonyl)amino]phenyl ester
CHEMICAL COMMON NAME: Phenmedipham
PLANT: Beet, sugar (BETA VULGARIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Broadleaf weeds
EXPERIMENTAL DOSE: 1.12 and 1.68 kg/ha
APPLICATION METHODS: Postemergence spray; 215 l./ha; combined with preemergence spray; mixtures also investigated
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: Variable control of weeds (slight to effective) with varible damage (slight to moderate) to sugar beet in single applications; pre- and postemergence applications combined provided better control
COMMENTS: Weed control greater with preemergence plus postemergence combination than with pre- or postemergence alone; crop injury from combination treatment did not affect yields; double postemergence applications did not adversely affect crop or recoverable sugar content compared to single postemergence treatments
REFERENCE: Penner, D., "Selective Use of Phenmedipham and EP-475 in Michigan for Weed Control in Sugarbeets," J. Am. Soc. Sugar Beet Technol. 18(2):97-107 (1974).

<1837>
CHEMICAL NAME: Carbamic acid, (3-methylphenyl)-, 3-[(methoxycarbonyl)amino]phenyl ester
CHEMICAL COMMON NAME: Phenmedipham
PLANT: Beet, sugar (BETA VULGARIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, green (SETARIA VIRIDIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PENSYLVANICUM); Buckwheat, wild (POLYGONUM CONVOLVULUS); Mustard, wild (BRASSICA KABER); Stinkweed (THLASPI ARVENSE)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: Postemergence
EXPERIMENTAL CONDITIONS: 12 treatments per trial, each trial replicated 8 times; 4 row wide plots, 50 ft. long--row 1 was untreated check, row 2 had herbicide plus hand weeding, row 3 received preemergence TCA at 8 lb/A and row 4 was same as row 2 except delayed hand weeding; visual ratings
EFFECTS: Minor crop damage, somewhat more pronounced at 1.5 lb/A; good control of barnyardgrass; moderate lambsquarter control at 1.0 lb/A, poor control at 1.5 lb/A; moderate pigweed control; poor control of other species
COMMENTS: Better results with 1.0 lb/A, less crop damage
REFERENCE: Klassen, M. and G. Guccione, "Evaluation of Herbicides for Weed Control in Sugarbeets in Manitoba," J. Amer. Soc. Sugar Beet. Technol. 16(7):553-560 (1971).

<1838>
CHEMICAL NAME: Carbamic acid, (3-methylphenyl)-, 3-[(methoxycarbonyl)amino]phenyl ester
CHEMICAL COMMON NAME: Phenmedipham
PLANT: Plants; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 1.0 kg/ha
APPLICATION METHODS: Postemergence
EXPERIMENTAL CONDITIONS: Field study; 5 sites in Romania; time period--1972 and 1973
EFFECTS: Moderate weed control with no adverse effect on sugar beet yield
COMMENTS: Results obtained from herbicides used alone unsatisfactory with many species uncontrolled; mixture of herbicides, or sequential treatments required for satisfactory weed control; best results obtained using ethofumesate associated with lenacil or phenmedipham
REFERENCE: Sarpe, N., O. Segarceanu, L. Ciorlaus, I. Popovici, I. Clotan, and C. Nagy, "The Efficiency of Herbicides Based on Pyrazone, Ethofumesate, Lenacil and Phenmedipha, Used Alone or in Combination, in Sugar Beet Grown Under Romanian Conditions," Proc. 12th. Br. Weed Cont. Conf. 2:477-483 (1974).

<1839>
CHEMICAL NAME: Carbamic acid, (3-methylphenyl)-, 3-[(methoxycarbonyl)amino]phenyl ester, mixt. with ethyl[3-[[(phenylamino)carbonyl]oxy]phenyl]carbamate
CHEMICAL COMMON NAME: SN-503
PLANT: Beet, sugar (BETA VULGARIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Broadleaf weeds
EXPERIMENTAL DOSE: 1.12 and 1.68 kg/ha
APPLICATION METHODS: Postemergence spray; 215 l./ha; combined with preemergence spray; mixtures also investigated
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: Variable control (slight to effective) of weeds with slight injury to sugarbeet
COMMENTS: Weed control greater with preemergence plus postemergence combination than with pre- or postemergence alone; crop injury from combination treatment did not affect yields; double postemergence applications did not adversely affect crop or recoverable sugar content compared to single postemergence treatments
REFERENCE: Penner, D., "Selective Use of Phenmedipham and EP-475 in Michigan for Weed Control in Sugarbeets," J. Am. Soc. Sugar Beet Technol. 18(2):97-107 (1974).

<1840>
CHEMICAL NAME: Carbamic acid, (3,4-dichlorophenyl)-, methyl ester
CHEMICAL COMMON NAME: SWEP
PLANT: Junglerice (ECHINOCHLOA COLONUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 4 and 6 kg/ha
APPLICATION METHODS: Treatment 15 days after rice emergence; knapsack spray application at 670 dm(3)/ha volume
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; 3 x 5 m plots; visual toxicity and weed control ratings
EFFECTS: C. ROTUNDUS and E. EXALTATA resistant; L. CHINENSIS and E. COLONUM susceptible; minor toxicity to rice
COMMENTS: Effects on all weeds not specifically reported
REFERENCE: Aryeetey, A.N., "Chemical Weed Control in Rice in Ghana," Ghana J. Agric. Sci. 6:199-204 (1973).

<1841>
CHEMICAL NAME: Carbamic acid, (3,4-dichlorophenyl)-, methyl ester
CHEMICAL COMMON NAME: Swep
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1842>
CHEMICAL NAME: Carbamic acid, (3,4-dichlorophenyl)-, methyl ester
CHEMICAL COMMON NAME: Swep
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 500 micro M
APPLICATION METHODS: Addition to assay preparations of chloroplasts
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: Increased photochemical activity and chloroplast bleaching
COMMENTS: Dual wavelength spectrophotometry applied to observations of small spectral changes during biochemical reactions in intact tissue; based on principle that absorbance reading at wavelength of isobestic point of reaction fluctuates with time in same manner as reading at wavelength where an absorbance change due to reaction takes place
REFERENCE: Inoue, Y., Yaginuma, N., Ogawa, T., Konishi, K., and K. Shibata, "Spectral Changes of Chloroplasts as a Means to Examine Phytotoxic Effects of Herbicides," in Environmental Toxicology of Pesticides, F. Matsumura, G.M. Boush, and T. Misato (Eds.) Academic Press, New York and London, pp. 549-570 (1972).

<1843>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulum
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Timothy (PHLEUM PRATENSE); Orchard grass (DACTYLIS GLOMERATA); Velvetgrass (HOLCUS LANATUS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Meadowgrass, rough stalked (POA TRIVIALIS); Fescue (FESTUCA PRATENSIS); Fescue, creeping red (FESTUCA RUBRA); Clover, white (TRIFOLIUM REPENS); Fescue, sheep's (FESTUCA OVINA)
EXPERIMENTAL DOSE: 0.2-8.3 kg/ha
APPLICATION METHODS: Postemergence spray to grass pasture; volume--225 l./ha usually, but 900 l./ha in logarithmic experiments; applied twice in most cases; Oxford Precision Sprayer with "00" Allman fan nozzles; made up in 0.1% Agral-90 solution; WP and water soluble (K salt) formulations for asulum, but water soluble formulation only for M&B 8882
EXPERIMENTAL CONDITIONS: Field study; established grasses sown and fertilized 6 mo-1 yr earlier; evaluation times--two weeks initially then four week intervals; soil--sand loam; regular cutting as needed throughout course of experiment
EFFECTS: 3.3 kg/ha application rate of asulum most effective in initial study; fall application more effective than summer application; at 3.4 kg/ha, WP formulation more effective than water soluble formulation; asulum more damaging to white clover than M&B 8882
COMMENTS: Patterns of selectivity similar in summer and fall, but latter slower to develop and more effective; suggested use is to alter species composition of pasture grasses to more favorable forage species
REFERENCE: Blair, A.M. and J. Holroyd, "Sensitivity of Benzene Sulfonyl Carbamyl Herbicides between Different Grass Species and Clover," Weed Res. 13(4):385-392 (1973).

<1844>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulam
PLANT: Clover, red (TRIFOLIUM PRATENSE); Dock, broad-leaf (RUMEX OBTUSIFOLIUS); Bluegrass, annual (POA ANNUA); Wartcress (CORONOPUS DIDYMUS); Chickweed, mouse-ear (CERASTIUM GLOMERATUM); Spurrey, corn (SPERGULA ARVENSIS); Shepherd's purse (CAPSELLA BURSA-PASTORIS)
EXPERIMENTAL DOSE: 1, 2, and 4 kg/ha
APPLICATION METHODS: Treatments applied by small pressure sprayer at volume rate of 280 l./ha and 2.5 kg/cm2 pressure; preplanting and post-emergence applications
EXPERIMENTAL CONDITIONS: Manawatu sandy loam; 16 mainplots each 3x1m for herbicide treatments and subplots (1.5x1m) as source of dock infestation; herbicides incorporated into top 7.5 cm soil by rotary cultivation; yields measured in kg/ha; seedlings and rootstock
EFFECTS: Seedling dock weight -- 2 and 4 kg/ha post-emergence gave 100% control, 90% control or better with other treatments except post-emergence 1 kg/ha which gave 70%; rootstock--2 and 4 kg/ha preplanting

<1844>
<1844> CONT.
treatments reduced rootstock by 30% at day 45, little change by day 236; no effect on other species
COMMENTS: Shoot meristems may be relatively more susceptible than root meristems; indication that activity in soil is shorter than trifluralin and carbetamide
REFERENCE: Brock, J.L., "The Control of Broad-Leaved Dock (RUMEX ORTUSIFOLIUS) in Newly-Sown Red Clover (TRIFOLIUM PRATENSE) with Trifluralin, Carbetamide and Asulam," Weed Res. 12:310-315 (1972).

<1845>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulum
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3)M; moderate control at 10(-4)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1846>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulum
PLANT: Bahiagrass (PASPALUM NOTATUM)
EXPERIMENTAL DOSE: 8.0 lb/A
APPLICATION METHODS: Postemergence spray; 37-50 gal/A
EXPERIMENTAL CONDITIONS: Field study; 3 locations (FL); time period--1971 and 1972; evaluation time--8 to 26 wks
EFFECTS: Effective control of bahiagrass
COMMENTS: Combinations of diuron or simazine plus 2 applications of dalapon, 2 applications of dalapon alone or single applications of glyphosate provided best grass control; in addition, bahiagrass controlled with oxadiazon and asulam
REFERENCE: Arnold, C.E. and J.B. Aitken, "Perennial Grass Control in Pecan Orchards," Proc. South. Weed Sci. Soc. 26:231-235 (1973).

<1847>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulam
PLANT: Johnson grass (SORGHUM HALEPENSE); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.5 lb/A
APPLICATION METHODS: Postemergence
EXPERIMENTAL CONDITIONS: Field tests; 4 replications, 68 rows wide and 30 feet long; Vicksburg fine sandy loam and Collins silt loam; each replication divided into 4 main plots, 16 rows wide plus 4 ft row wide check; fall applications to established johnsongrass sod
EFFECTS: Foliage injury, incomplete foliage kill
COMMENTS: Two weeks after application, ground plowed and other herbicides added in spring
REFERENCE: Overton, J.R., J.A. Mullins, and L.S. Jeffery, "Johnsongrass Control in Corn Harvested for Silage," Tenn. Farm Home Sci. Prog. Rep. 94:18-20 (1975).

<1848>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Velpar
PLANT: Ash, green (FRAXINUS PENNSYLVANICA); Poplar, yellow (LIRIODENDRON TULIPIFERA); Walnut, black (JUGLANS NIGRA); Pine, white (PINUS STROBUS); Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 1.0 and 2.0 kg/ha; 90% SP
APPLICATION METHODS: Posttransplant spray; 29 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Ross-Geneco complex
EFFECTS: Reduced survival of ash, poplar, walnut, and white pine with slight or no adverse effect on red pine
COMMENTS: Oxadiazon, napropamide and simazine produced very favorable results at low rates; simazine only injurious to green ash; diphenamid and DCPA effective without incorporation only at extremely high rates; tolerance range for Velpar and PP-23465 for use on newly planted seedlings appear very small; bifenox as used did not appear to be detrimental to seedlings
REFERENCE: Wiltrout, T.R. and H.A. Holt, "Prospects of Controlling Vegetation in New Forest Plantations," Proc. N. Cent. Weed Control Conf. 30:31-36 (1975).

<1849>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulum
PLANT: Oat, wild (AVENA FATUA); Foxtail, green (SETARIA VIRIDIS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Flax (LINUM USITATISSIMUM)
EXPERIMENTAL DOSE: 0.84 and 1.12 kg/ha
APPLICATION METHODS: Postemergence; 185 l./ha; pressure--2.1 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--Assiniboine clay loam; pH near neutral; time period--1972 to 1975; evaluation time-4 wk
EFFECTS: Effective control of wild oats and foxtail with little or no control of lambsquarters and pigweed; no adverse effect on flax seed yield

<1849> CONT.
COMMENTS: Asulam gave good wild oat control and acceptable control of green foxtail; wild oat control poorer when asulam was combined with other herbicides--on a 3-year average, as compared with asulam alone at equal rates; asulam + MCPA mixture resulted in a greater antagonism and a significant 6% reduction in flax seed yield
REFERENCE: Chow, P.N., "Asulum Mixtures for Weed Control in Flax," Weed Res. 17(1):55-60 (1977).

<1850>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulam
PLANT: Ragwort, marsh (SENECIO AQUATICUS); Clover, white (TRIFOLIUM REPENS)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Spring applications with knapsack sprayer at 225 l./ha
EXPERIMENTAL CONDITIONS: Two applications--April and May; 20 m x 6 m plots; observations made for 2 years, applications made only during first year
EFFECTS: Spraying year--60% ragwort control from April spraying, 72% from May spraying; 65% ragwort control the following year from April spraying and 81% from May spraying; no damage to clover stand
COMMENTS: Spraying year--May spraying gave better control of ragwort than April spraying; year after spraying--spraying differences disappeared; all treatments gave better control year after spraying
REFERENCE: Forbes, J.C., "Chemical Control of Marsh Ragwort SENECIO-AQUATICUS in Established Grassland," Weed Res. 17(4):247-250 (1977).

<1851>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulum
PLANT: Squash, summer (CUCURBITA PEPO); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass (DIGITARIA sp.); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 2.0, 4.0 and 6.0 lb/A
APPLICATION METHODS: Preplant and preemergence applications; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of crabgrass at highest rates but poor to moderate control of other weeds with slight effect on squash vigor; asulum more effective as preemergence application
COMMENTS: Outstanding preplant incorporated treatment was bensulide followed by chloramben, methyl ester applied preemergence; outstanding preemergence treatment for both weed control and yield was chloramben, methyl ester + asulam; crop injury induced by following preplant incorporated treatments: dibutalin, dinitramine (USB 3584), nitralin, and bensulide followed by naptalam applied preemergence
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "Some Promising Herbicides for Weed Control in Summer Squash," Proc. Northeast. Weed Sci. Soc. 28:224-228 (1974).

<1852>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulam
PLANT: Paragrass (PANICUM PURPURASCENS)
EXPERIMENTAL DOSE: 1.0, 1.5, 2.0, and 3.0 lb/A; sodium salt
APPLICATION METHODS: Postemergence spray; 25 gal/A; up to three repeat applications
EXPERIMENTAL CONDITIONS: Field study; soil--Humatas clay loam; evaluation time--up to 20 wk; clipped or non-clipped paragrass plots treated; combined applications
EFFECTS: Moderate control of paragrass at 2.0 and 3.0 lb/A when applications repeated second and third times
COMMENTS: Spray applied to regrowth generally gave better control for longer periods; best control obtained with dalapon + TCA applied twice; low rate initially and one-half rate at repeat application fully as effective as higher rate tested; dalapon alone nearly as effective as dalapon + TCA combination on both older growth and regrowth
REFERENCE: Whitney, A. S., A. V. Ramos, and A. S. Rios, "Chemical Control of Paragrass (BRACHIARIA MUTICA) in a Humid Upland Area," J. Agr. Univ. P. R. 57(2):129-135 (1973).

<1853>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulam
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Good sesame tolerance and poor barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<1854>
<1854>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulum
PLANT: Fern, bracken (PTERIDIUM AQUILINUM)
EXPERIMENTAL DOSE: 2.0 to 4.5 kg/ha
APPLICATION METHODS: Foliar spray; 11.2 to 1680 l./ha
EXPERIMENTAL CONDITIONS: Field studies; 21 locations; time period--1970 to 1972
EFFECTS: Effective control persisted two years
COMMENTS: Bracken treated with asulam showed some sign of herbicidal damage in year of application in form of frond-tip chlorosis; effect mainly manifested by little regrowth of stem in following year
REFERENCE: Soper, D., "Review of Bracken Control Experiments With Asulam," Proc. 11th. British Weed Cont. Conf. 1:24-31 (1972).

<1855>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulum
PLANT: Fern, bracken (PTERIDIUM AQUILINUM); Grasses
EXPERIMENTAL DOSE: 2.2 and 4.4 kg/ha; 40% concentrate
APPLICATION METHODS: Foliar spray; 100 kN/m(2) and 27.5, 55.0 and 220 l./ha
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of bracken fern with no apparent damage to associated grasses
COMMENTS: Excellent control of bracken obtained with asulam applied at 2.2 and 4.4 kg/ha by knapsack sprayer, and by helicopter; Glyphosate applied in mid July and August gave complete destruction of both bracken fronds and grass sward beneath in year of application with almost no regeneration of either in following year
REFERENCE: Scragg, E.B., A.D. McKelvie, and D.W. Kilgour, "Further Work on the Control of Bracken in the North of Scotland," Proc. 12th. British Weed Cont. Conf. 2:761-769 (1974).

<1856>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulum
PLANT: Velvetgrass (HOLCUS LANATUS); Timothy (PHLEUM PRATENSE)
EXPERIMENTAL DOSE: 0.56, 1.12, and 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 450 l./ha; Oxford precision sprayer--'0' size nozzle
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of HOLCUS and slight damage to timothy at highest rate
COMMENTS: Linuron proved most successful in controlling HOLCUS; gave highest yields of timothy at hay cut and heaviest individual seed heads; glyphosate particularly severe on timothy growth; asulam offered reasonable degree of control at a high rate of spraying
REFERENCE: Harkess, R.D. and R.A. Hope, "The Control of Yorkshire Fog (HOLCUS LANATUS L.) in Timothy Swards," Proc. 12th. Br. Weed Cont. Conf. 2:733-736 (1974).

<1857>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulum
PLANT: Fern, bracken (PTERIDIUM AQUILINUM)
EXPERIMENTAL DOSE: 1.1 to 4.4 kg/ha
APPLICATION METHODS: Foliar spray; 100 kN/m(2) and 540 l./ha
EXPERIMENTAL CONDITIONS: Field study; 5 locations in Scotland; time period--1970 to 1972
EFFECTS: Effective control of bracken
COMMENTS: Excellent control obtained with 1.1 and 2.2 kg/ha asulam, applied in early July at full frond development; low volume air-blast knapsack spraying gave results as good as those obtained by medium volume hydraulic knapsack application; results very consistent between sites and under varying weather conditions; herbicide did not appear to require accurate or careful application to achieve success
REFERENCE: Scragg, E.B., A.D. McKelvie, and D.W. Kilgour, "Control of Bracken with Asulam in the North Scotland," Proc. 11th. Br. Weed Cont. Conf. 1:335-341 (1972).

<1858>
CHEMICAL NAME: Carbamic acid, [(4-aminophenyl)-sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: Asulum
PLANT: Dock, broad-leaf (RUMEX OBTUSIFOLIUS); Dock, curly (RUMEX CRISPUS)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; established grasslands; time period--1970-1972; 12 sites; applied in varied combinations and schedules; G less effective
EFFECTS: Moderate control of docks but less effective than dicamba
COMMENTS: No herbicide achieved total control; double spraying of dicamba particularly effective but at exorbitant cost for farm-scale use; next best control attained by dicamba-based herbicides sprayed in May successively for two years
REFERENCE: Frame, J. and R.D. Harkness, "Herbicides for Control of Docks (RUMEX spp.) in Grassland," Proc. 11th. Br. Weed Cont. Conf. 11(1):323-330 (1972).

<1859>
CHEMICAL NAME: Carbamic acid, [(4-chlorophenyl)thio]methyl-, 2-(methylpropyl) phenyl ester, mixt. with 3-(1-methylpropyl)phenyl[(4-chlorophenyl)-thio]methylcarbamate and 4-(1-methylpropyl)phenyl[(4-chlorophenyl)thio]methyl-carbamate
CHEMICAL COMMON NAME: RE-11776
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 2.0 and 4.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A

<1859> CONT.
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight to moderate leaf damage with no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<1860>
CHEMICAL NAME: Carbamic acid, [(4-nitrophenyl)sulfonyl]-, methyl ester
CHEMICAL COMMON NAME: M&B-8882
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Timothy (PHLEUM PRATENSE); Orchard grass (DACTYLIS GLOMERATA); Velvetgrass (HOLCUS LANATUS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Meadowgrass, rough stalked (POA TRIVIALIS); Fescue (FESTUCA PRATENSIS); Fescue, creeping red (FESTUCA RUBRA); Clover, white (TRIFOLIUM REPENS); Fescue, sheep's (FESTUCA OVINA)
EXPERIMENTAL DOSE: 0.8-4.5 kg/ha
APPLICATION METHODS: Postemergence spray to grass pasture; volume--225 l./ha usually, but 900 l./ha in logarithmic experiments; applied twice in most cases; Oxford Precision Sprayer with "00" Allman fan nozzles; made up in 0.1% Agral-90 solution; WP and water soluble (K salt) formulations for asulum, but water soluble formulation only for M&B 8882
EXPERIMENTAL CONDITIONS: Field study; established grasses sown and fertilized 6 mo-1 yr earlier; evaluation times--two weeks initially then four week intervals; soil--sand loam; regular cutting as needed throughout course of experiment
EFFECTS: 3.4 kg/ha application rate generally effective as same rate of asulum with less damage to clover
COMMENTS: Patterns of selectivity similar in summer and fall, but latter slower to develop and more effective; suggested use is to alter species composition of pasture grasses to more favorable forage species
REFERENCE: Blair, A.M. and J. Holroyd, "Sensitivity of Benzene Sulfonyl Carbamyl Herbicides between Different Grass Species and Clover," Weed Res. 13(4):385-392 (1973).

<1861>
CHEMICAL NAME: Carbamic acid, [(4-nitrophenyl)sulfonyl]-, methyl ester
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Meadowgrass, rough stalked (POA TRIVIALIS); Timothy (PHLEUM PRATENSE); Fescue, tall (FESTUCA ARUNDINACEA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Ryegrass, perennial (LOLIUM PERENNE); Fescue, meadow (FESTUCA ELATIOR); Cocksfoot
EXPERIMENTAL DOSE: 32, 48, 64, and 96 oz/A
APPLICATION METHODS: Preplanting, preemergence, and postemergence sprays
EXPERIMENTAL CONDITIONS: Clay or heavy clay soils; 1966-67 and 1967-68 main trials, wet weather hampered 1966-67 trial thus study emphasis on 1967-68 trial; spraying dates of 8/22/67, 9/22/67, 1/4/68, 3/4/68, and 3/5/68; 2 to 3 replicates; average for all crop grasses reported
EFFECTS: Crop injury (severe at high rates) 11 wk after planting, no injury at 26 wk, and moderate injury at 35 wk; A. MYOSUROIDES--preplanting treatment 8 wk before sowing gave poor to moderate control, good to excellent preemergence and 1 leaf stage control, no control when well tillered; P. TRIVIALIS--excellent preemergence and 1 leaf stage control, poor to good control when well tillered
COMMENTS: Crop grasses sown 7/5/67, weed grasses sown 8/21/67, 9/18/67, and 2/29/68
REFERENCE: Shildrick, J.P. and T.J. Arthur, "Control of ALOPECURUS MYOSUROIDES (Blackgrass) and POA TRIVIALIS (Routh-stalked Meadow Grass) in Grass Seed Crops by Herbicides," Nat. Inst. Agric. Bot. (Cambridge) Rep. Acc. 11(2):361-369 (1968).

<1862>
CHEMICAL NAME: Carbamic acid, [[diethoxyphosphinothioyl)thio]acetyl]methyl-, ethyl ester
CHEMICAL COMMON NAME: TD-72
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 6.7 lb/gal technical TD-72 EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Growth retardation and foliage injury
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<1863>
CHEMICAL NAME: Carbamic acid, [1-[(butylamino) carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
CHEMICAL COMMON NAME: Benlate
PLANT: Barley (HORDEUM VULGARE); Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.025%
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Reduced seed germination and seedling injury of barley and chromosome aberrations of barley and broad bean
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the

<1863>
<1863> CONT.
secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<1864>
CHEMICAL NAME: Carbamic acid, [1-[(butylamino) carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
CHEMICAL COMMON NAME: MBC
PLANT: Gherkin
EXPERIMENTAL DOSE: 37.2 g/100 l.; 3.3, 33, and 66 gal/100 l. soil
APPLICATION METHODS: Foliar treatment--37.2 g/100 l.; soil treatment--3.3, 33, and 66 g/100 l. soil; 50% WP formulation
EXPERIMENTAL CONDITIONS: Foliar sprays at 2, 2 and 4, and 2, 4, and 6 weeks after planting; soil treatments--planted in 12 cm dia. pots but transferred to 18 cm dia. pots before treatment, mixing of test compound around original pot volume for one treatment and drenching original pot volume was another treatment; 3 replicates for soil treatments, 4 for spray treatment; weight of leaves determined as measure of phytotoxicity 8 wk after transfer to 18 cm dia. pots
EFFECTS: Foliar treatments--leaves of lower 50 cm of each plant not harmed, 50 to 100, and 100 to 150 cm sections showed inhibition in leaf development; soil treatment--leaf weight decreased, more reduction by soil drenching than by mixing, no difference between 50 cm sections of plant
COMMENTS: Compound produces MBC residues in plant
REFERENCE: Van Wambeke, F. and C. Van Assche, "MBC Residues and Phytotoxicity in Gherkin Plants by Soil and Foliar Spray Applications with MBC Producing Compounds," Proc. Br. Insecticide Fungicide Conf. 1:35-42 (1975).

<1865>
CHEMICAL NAME: Carbamic acid, [1-[(butylamino)-carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
CHEMICAL COMMON NAME: Benomyl
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 16 oz/100 lb
APPLICATION METHODS: Application to seed prior to planting
EXPERIMENTAL CONDITIONS: Field study; wheat seed infected; time period--1967-1971
EFFECTS: 10% reduction in seedling emergence
COMMENTS: Control of loose smut of wheat obtained with benomyl and carboxin in field trials of 3 and 5 years, respectively; either compound applied as seed dressing of 4 oz or more per hundredweight gave adequate control; there was a 10% reduction in seedling emergence with 16 oz/100 lb benomyl in 1969; both compounds were compatible with methylmercury fungicide overtreatments
REFERENCE: Jones, J.P. and F.C. Collins, "Control of Loose Smut of Wheat With Carboxin and Benomyl," Plant Dis. Rep. 55(12): 1053-1055(1971).

<1866>
CHEMICAL NAME: Carbamic acid, [1-[(butylamino)-carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
CHEMICAL COMMON NAME: Benomyl
PLANT: Cabbage (BRASSICA OLERACEA); Cauliflower (BRASSICA OLERACEA); Broccoli (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 0.039 to 1.232 mg/g (of soil)
APPLICATION METHODS: Addition to soil surface following transplanting; surfactants (GAFAC RA-600, GAFAC RS-710 and Tween-20) added
EXPERIMENTAL CONDITIONS: Greenhouse study; soil-- sandy loam and sand; tray culture; temperature--22 to 26 C; RH--65-75%; seed germination assay; field study
EFFECTS: Reduced growth of some crucifers (one variety of cabbage and cauliflower) but not others (most cabbage varieties, broccoli, and brussels sprouts); no adverse effect on percent seed germination of cabbage
COMMENTS: Benomyl reduced fresh weight of cabbage and cauliflower (leaves severely burned); no growth reduction occurred on cabbage cultivars Red Rock, Early Greenball, King Cole, and Chieftain Savoy or on broccoli and brussels sprouts
REFERENCE: Reyes, A.A., "Phytotoxicity of Benomyl to Crucifers," Phytopathology 65(5):535-539 (1975).

<1867>
CHEMICAL NAME: Carbamic acid, [1-[(butylamino)-carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
CHEMICAL COMMON NAME: Benomyl
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: 0.5 lb/A caused foliar injury to schefflera; 1.0 lb/A caused foliar injury to schefflera and palm; no effect on other species
COMMENTS: 50% WP formulation; trade name Benlate
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<1868>
CHEMICAL NAME: Carbamic acid, [1-[(butylamino)-carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
CHEMICAL COMMON NAME: Benomyl
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 5-200 pm
APPLICATION METHODS: Addition to culture solution
EXPERIMENTAL CONDITIONS: Hydroponic culture in glass tubes in darkness with aeration; evaluation time--1 to 5 days; Knop culture soluton
EFFECTS: Root elongation reduced at 50 ppm and higher concentrations
COMMENTS: Strong systemic fungicidal activity of benomyl together with comparatively low phytocidal activity to cotton seedling merits further consideration; 5-ethoxy-3-(trichloromethyl)-1,2,4-thiadiazole and carboxin more phytotoxic than benomyl, but possessed excellent potential use on cotton seedlings; sorbic acid and pimaricin seemed to offer little potential value in cotton seedling disease control
REFERENCE: Davis, R.G. and J.A. Pinckard, "Comparative Systemic Fungicidal Activity and Phytotoxicity of Certain Seed and Soil Fungicides Potentially Useful for Control of Cotton Seedling Diseases," Plant Dis. Rep. 55(12):1111-1115 (1971).

<1869>
CHEMICAL NAME: Carbamic acid, [1-[(butylamino)-carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
CHEMICAL COMMON NAME: Benomyl
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 0.025%
APPLICATION METHODS: Postemergence spray for control of fungal disease; 200 gal/A; sprayed to run-off
EXPERIMENTAL CONDITIONS: Field study; established orchards; time period--1967 to 1970; trees shielded during spraying
EFFECTS: Increased fruit damage (russeting) of most but not all varieties; alleviated to some extent with Urbacid or captan
COMMENTS: New compounds increased fruit russet and reduced crop and fruit size on several cultivars; important amelioration of russet achieved in some instances by adding Urbacid or captan to sprays
REFERENCE: Butt, D.J., A.H.M. Kirby, and C.J. Williamson, "Fungitoxic and Phytotoxic Effects of Fungicides Controlling Powdery Mildew on Apple," Ann. Appl. Biol. 75(2):217-228 (1973).

<1870>
CHEMICAL NAME: Carbamic acid, [1-[(butylamino)-carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
CHEMICAL COMMON NAME: Benomyl
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 150 mg/plant
APPLICATION METHODS: Treatment done through Benlate aqueous suspension (3.5 mg/ml)
EXPERIMENTAL CONDITIONS: Glasshouse experiments; 16 hr photoperiod, day temperature 28 C and 24 C at night; treatments applied when plants had 4 fully expanded leaves; determination made of effect on chlorophyll and on photosynthetic activity
EFFECTS: No external symptoms until 6th day after treatment on melon--slight marginal chlorosis observed on 6th day, from 8th day some leaves showed malformation and necrotic lesions on edges; chlorophyll content decreased with time following treatment; photosynthetic activity markedly decreased after 5 days
COMMENTS: Benomyl--fungicide used to control variety of plant diseases
REFERENCE: Baijot, E., J.B. DeCallonne, and J.A. Meyer, "Modifications Induced by Benomyl and Related compounds into Chloroplasts Spectral Patterns, Photosynthetic Rates and Chlorophyll contents of SPINACIA OLERACEA and CUCUMIS MELO," Bull. Environ. Contam. Toxicol 17(4):431-437 (1977).

<1871>
CHEMICAL NAME: Carbamic acid, [1-[(butylamino)-carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
CHEMICAL COMMON NAME: Benomyl
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal--based upon formulation per 100 gal water
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: 0.5 lb/A caused foliar injury to schefflera; 1.0 lb/A caused foliar injury to schefflera; and palm; no effect on other species
COMMENTS: 50% WP formulation; trade name Benlate
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<1872>
CHEMICAL NAME: Carbamic acid, [1-[(butylamino)-carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
CHEMICAL COMMON NAME: Benomyl
PLANT: Azalea (RHODENDRON OBTUSUM)
EXPERIMENTAL DOSE: 0.75 lb/100 gal
APPLICATION METHODS: Postemergence spray; 50 WP
EXPERIMENTAL CONDITIONS: Greenhouse study of rooting as affected by root-rot fungus; pot culture; cuttings treated by drenching soil; temperature--24 to 41 C; evaluation time--2 to 5 mos
EFFECTS: Leaf necrosis--foliage application only
COMMENTS: Several compounds gave good control of CYLINDROCLADIUM root rot
REFERENCE: Englehard, A.W., "Efficacy of Benzimidazole Dips, Drenches and Sprays for the Control of CYLINDROCLADIUM on Azalea," Plant Dis. Rep. 55(8):679-682 (1971).

<1872>
<1873>
CHEMICAL NAME: Carbamic acid, [1-[(butylamino)-carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
CHEMICAL COMMON NAME: Benomyl
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.04 and 012 g/220g soil
APPLICATION METHODS: Soil addition
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--22.7 to 26.7 C; evaluation time--up to 27 da
EFFECTS: Reduced growth of all 6 cultivars initially but increased growth by 27 da
COMMENTS: Benomyl, thiophanate-methyl, and thiophanate as soil drenches, showed growth-regulating properties in wild-susceptible and resistant muskmelon grown in soil infested with FUSARIUM OXYSPORUM; after an initial 12 days of suppression, growth rates accelerated, and enhanced total growth (leaf area) obtained for most cultivars
REFERENCE: Wensley, R.N., "Effects of Benomyl and Two Related Systemic Fungicides on Growth of FUSARIUM Wilt-Susceptible and Resistant Muskmelon," Can. J. Plant Sci. 52:775-779 (1972).

<1874>
CHEMICAL NAME: Carbamic acid, [1-[(butylamino)-carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
CHEMICAL COMMON NAME: Benomyl
PLANT: Gherkin
EXPERIMENTAL DOSE: 50 g/100 l.; 5,50, and 100 g/100 l. soil
APPLICATION METHODS: Spray--50 g/100 l.; soil treatments--5, 50, and 100 g/100 l. soil; 50% WP formulation
EXPERIMENTAL CONDITIONS: Foliar sprays at 2, 2 and 4, and 2, 4, and 6 weeks after planting; soil treatments--planted in 12 cm dia. pots but transferred to 18 cm dia. pots before treatment, mixing of test compound around original pot volume for one treatment and drenching original pot volume was another treatment; 3 replicates for soil treatments, 4 for spray treatment; weight of leaves determined as measure of phytotoxicity 8 wk after transfer to 18 cm dia. pots
EFFECTS: Foliar treatments--leaves of lower 50 cm of each plant not harmed, 50 to 100, and 100 to 150 cm sections showed inhibition in leaf development; soil treatment--leaf weight decreased, more reduction by soil drenching than by mixing, no difference between 50 cm sections of plant
COMMENTS: Compound produces MBC residues in plant
REFERENCE: Van Wambeke, E. and C. Van Assche, "MBC Residues and Phytotoxicity in Gherkin Plants by Soil and Foliar Spray Applications with MBC Producing Compounds," Proc. Br. Insecticide Fungicide Conf. 1:35-42 (1975).

<1875>
CHEMICAL NAME: Carbamic acid, [1,2-phenylbis(iminocarbonothioyl)]bis-, diethyl ester
CHEMICAL COMMON NAME: Thiophanate
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.04 and 012 g/220g soil
APPLICATION METHODS: Soil addition
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--22.7 to 26.7 C; evaluation time--up to 27 da
EFFECTS: Slightly reduced growth initially at both rates of most cultivars but increased growth after 27 da
COMMENTS: Benomyl, thiophanate-methyl, and thiophanate as soil drenches, showed growth-regulating properties in wild-susceptible and resistant muskmelon grown in soil infested with FUSARIUM OXYSPORUM; after an initial 12 days of suppression, growth rates accelerated, and enhanced total growth (leaf area) obtained for most cultivars
REFERENCE: Wensley, R.N., "Effects of Benomyl and Two Related Systemic Fungicides on Growth of FUSARIUM Wilt-Susceptible and Resistant Muskmelon," Can. J. Plant Sci. 52:775-779 (1972).

<1876>
CHEMICAL NAME: Carbamic acid, [1,2-phenylenebis(iminocarbonothioyl)]bis-, dimethyl ester
CHEMICAL COMMON NAME: Thiophanate-methyl
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.04 and 012 g/220g soil
APPLICATION METHODS: Soil addition
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--22.7 to 26.7 C; evaluation time--up to 27 da
EFFECTS: Slightly reduced growth initially at both rates of most cultivars but increased growth after 27 da
COMMENTS: Benomyl, thiophanate-methyl, and thiophanate as soil drenches, showed growth-regulating properties in wild-susceptible and resistant muskmelon grown in soil infested with FUSARIUM OXYSPORUM; after an initial 12 days of suppression, growth rates accelerated, and enhanced total growth (leaf area) obtained for most cultivars
REFERENCE: Wensley, R.N., "Effects of Benomyl and Two Related Systemic Fungicides on Growth of FUSARIUM Wilt-Susceptible and Resistant Muskmelon," Can. J. Plant Sci. 52:775-779 (1972).

<1877>
CHEMICAL NAME: Carbamic acid, [1,2-phenylenebis(iminocarbonthioyl)]bis-, dimethyl ester
CHEMICAL COMMON NAME: Thiophonate-methyl
PLANT: Gherkin
EXPERIMENTAL DOSE: 42.1 g/100 l.; 4.2, 42, and 84 g/100 l. soil
APPLICATION METHODS: Foliar spray--42.1 g/100 l.; soil treatments--4.2, 42, and 84 g/100 l. soil; 70% WP formulation
EXPERIMENTAL CONDITIONS: Foliar sprays at 2, 2 and 4, and 2, 4, and 6 weeks after planting; soil treatments--planted in 12 cm dia. pots but transferred to 18 cm dia. pots before treatment, mixing of test compound around original pot volume for one treatment and drenching original pot volume was another treatment; 3 replicates for soil treatments, 4 for spray treatment; weight of leaves determined as measure of phytotoxicity 8 wk after transfer to 18 cm dia. pots
EFFECTS: Foliar treatments--leaves of lower 50 cm of each plant not harmed, 50 to 100, and 100 to 150 cm sections showed inhibition in leaf development; soil treatment--leaf weight decreased, more reduction by

<1877> CONT.
soil drenching than by mixing, no difference between 50 cm sections of plant
COMMENTS: Compound produces MBC residues in plant
REFERENCE: Van Wambeke, E. and C. Van Assche, "MBC Residues and Phytotoxicity in Gherkin Plants by Soil and Foliar Spray Applications with MBC Producing Compounds," Proc. Br. Insecticide Fungicide Conf. 1:35-42 (1975).

<1878>
CHEMICAL NAME: Carbamic acid, [3-[[(phenylamino)carbonyl]oxy]phenyl]-, ethyl ester
CHEMICAL COMMON NAME: Desmedipham
PLANT: Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 1.1 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Plastic pot culture in greenhouse initially with transfer to environmental chamber for experiments; day temperatures ranged from 10 to 40 C at 5 C intervals; night temperatures 10 C less; day length--16 hr; night length--8 hr; light intensity--490 microeinsteins per sq m/sec; spectral range--400 to 700 nm
EFFECTS: Temperature response curves for photosynthetic inhibition (after 7 hr) and growth inhibition (7 days) were similar; both inhibitions most severe at 25 and 30 C with decrease in inhibition at lower and higher temperatures; increasing temperatures resulted in greater inhibition; increasing light intensity caused greater inhibition of photosynthesis
COMMENTS: Temperature and light intensity modification of desmedipham effects generally paralleled previous reports of desmedipham toxicity
REFERENCE: Bethlenfalvay, G. and P.F. Norris, "Phytotoxic Action of Desmedipham: Influence of Temperature and Light Intensity," Weed Sci. 23(6):499-503 (1975).

<1879>
CHEMICAL NAME: Carbamic acid, [3-[[(phenylamino)carbonyl]oxy]phenyl]-, ethyl ester
CHEMICAL COMMON NAME: Desmedipham
PLANT: Grasses; Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Postemergence treatment 26 days after planting
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared the following April; single row plots, 3 by 26 ft; treatments randomized in each of 8 blocks; 15 ft of row from each plot harvested July 16; non-treated plot--43 plants harvested
EFFECTS: Good grass control on June 7; good lambsquarter control on June 7 and June 14; good ragweed control on July 14; beets harvested--88 plants at 1.0 lb/A and 95 plants at 2 lb/A
COMMENTS: 2 lb/A gave slightly better control than 1.0 lb/A; desmedipham and phenmedipham best for weed control of herbicides tested; desmedipham in combination with other herbicides also reported
REFERENCE: Noll, C.J., "Weed Control in Beets with Herbicides," Proc. Northeast. Weed Sci. Soc. 31:244-246 (1977).

<1880>
CHEMICAL NAME: Carbamic acid, [3-[[(phenylamino)carbonyl]oxy]phenyl]-, ethyl ester
CHEMICAL COMMON NAME: EP-475
PLANT: Beet, sugar (BETA VULGARIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Broadleaf weeds
EXPERIMENTAL DOSE: 1.12 and 1.68 kg/ha
APPLICATION METHODS: Postemergence spray; 215 l/ha; combined with preemergence spray; mixtures also investigated
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: Variable control (slight to effective) of weeds with slight injury to sugarbeet
COMMENTS: Weed control greater with preemergence plus postemergence combination than with pre- or postemergence alone; crop injury from combination treatment did not affect yields; double postemergence applications did not adversely affect crop or recoverable sugar content compared to single postemergence treatments
REFERENCE: Penner, D., "Selective Use of Phenmedipham and EP-475 in Michigan for Weed Control in Sugarbeets," J. Am. Soc. Sugar Beet Technol. 18(2):97-107 (1974).

<1881>
CHEMICAL NAME: Carbamic acid, acetylmethyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester
CHEMICAL COMMON NAME: Bay 78537
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 and 8.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight to moderate leaf damage and no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<1882>
<1882>
CHEMICAL NAME: Carbamic acid, butyl-, phenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and Preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--2; corn--1; broadleaf weeds--1; broadleaf crops--3
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1883>
CHEMICAL NAME: Carbamic acid, dibutylthio-, S-ethyl ester
CHEMICAL COMMON NAME: R-1870
PLANT: Couchgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-4) M, 10(-5) M, and 10(-6) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-4) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1884>
CHEMICAL NAME: Carbamic acid, dibutylthio-, S-ethyl ester
CHEMICAL COMMON NAME: R-1870
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 3.0 and 6.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate control of weeds and no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<1885>
CHEMICAL NAME: Carbamic acid, dimethyl-, 1-[(dimethylamino)carbonyl]-5-methyl-1H-pyrazol-3-yl ester
CHEMICAL COMMON NAME: Dimetilan
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% WP and 25% EC formulations
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Most plants killed--all WP concentrations killed plants, 0.25 and 0.125% EC formulation killed plants
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125 and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<1886>
CHEMICAL NAME: Carbamic acid, dimethyl-, 2-(dimethylamino)-5,6-dimethyl-4-pyrimidinyl ester
CHEMICAL COMMON NAME: Pirimor
PLANT: Cascara (RHAMNUS PURSHIANA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Florida beauty (DRACENA GODSEFFIANA); Holly, burford (ILLEX CORNUTA); Juniper (JUNIPERUS CHINENSIS); Privet (LIGUSTRUM JAPONICUM); Prayer plant (MARANTA LEUCONEURA); Red nerve plant (MARANTA RUBRANEURAL); Fluffy ruffle (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Podocarpus (PODOCARPUS MAKI); Golden pothos (SCINDAPSUS AUREUS); Nephritis (SYNGONIUM PODOPHYLLUM)
EXPERIMENTAL DOSE: 0.25 and 0.50 lb/A; 50% WP; sticker-spreader (Plyac)
APPLICATION METHODS: Postemergence spray to run-off; 3X applications at weekly intervals
EXPERIMENTAL CONDITIONS: Greenhouse study; temperatures--80 to 85 F (day) and 62 to 68 F (night); RH--60 to 95%; evaluation time--1 wk
EFFECTS: Only slight injury mostly at 2X rate of shefflera, fluffy ruffle, peperomia, cordatum, golden pothos, and nephtytis; no injury of remaining plants

<1886> CONT.
COMMENTS: Almost one-half plants exhibited some phytotoxic response; most sensitive plants were schefflera, fluffy ruffle fern, peperomia, and golden pothos; most toxic chemicals were plictran and omite and least phytotoxic materials were zectran and pirimor
REFERENCE: Short, D.E. and D.B. McConnell, "Pesticide Phytotoxicity to Ornamental Plants," Proc. Fla. St. Hort. Soc. 86:439-442 (1974).

<1887>
CHEMICAL NAME: Carbamic acid, dimethyl-, 2-(dimethylamino)-5,6-dimethyl-4-pyrimidinyl ester
CHEMICAL COMMON NAME: Pirimicarb
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Dracena (DRACAENA SANDERIANA); Prayer plant (MARANTA LEUCONEURA); Sword-fern (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
EXPERIMENTAL DOSE: 0.125 and 0.25 lb/100 gal
APPLICATION METHODS: Formulation--50% WP at 4 and 8 oz respectively; 4 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume euivalent); Plyac (spreader-sticker) added to controls and treatments at rate of 2 oz/100 gal water; sprays applied prior to 10:00 a.m.; 5 tests from May to November; temprature--83-98 F (day) and 56 to 78 F (night); greenhouse conditions
EFFECTS: N. EXALTATA--no injury at 0.125 lb, slight injury at 0.25 lb (leaf deformity); no injury to other plants
COMMENTS: Experimental concentrations--recommended and twice the recommended rate
REFERENCE: Hamlen, R.A. and P.W. Henley, "Phytotoxicity to Tropical Foliage Plants of Repeated Insecticide and Miticide Applications Under Fiberglass-Covered Greenhouse Conditions," Proc. Fla. State Hort. Soc. 89:336-338 (1976).

<1888>
CHEMICAL NAME: Carbamic acid, dimethyl-, 3-methyl-1-(1-methylethyl)-1H-pyrazol-5-yl ester
CHEMICAL COMMON NAME: Isolan
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Growth reduction and foliar damage
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125 and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<1889>
CHEMICAL NAME: Carbamic acid, dimethyl-, 6-methyl-2-propyl-4-pyrimidinyl ester
CHEMICAL COMMON NAME: Pyramat
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% WP and 25% EC formulations
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Growth reduction and foliar damage, 0.25% killed plants 6 weeks after third application
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<1890>
CHEMICAL NAME: Carbamic acid, ethyl nitroso-, ethyl ester
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.1 and 0.2 ppth
APPLICATION METHODS: Dry seeds (12% water) immersed in aqueous solution of chemical with continuous stirring at 25 C for 8 hr
EXPERIMENTAL CONDITIONS: After treatment, seeds washed in running tap water (1 min) and sown in greenhouse; survivors later transplanted to field; tillering, sterility, seeds per ear, plantlets per spike, mutations on spike basis, and mutant plantlets studied
EFFECTS: Tillering--slight increase compared to control; sterility--21.0 at 0.1 ppth and 43.5 at 0.2 ppth compared to control at 0.5; seeds per ear--25.4 at 0.1 ppth and 17.4 at 0.2 ppth compared to 33.0 for control; plantlets per spike--19.7 at 0.1 ppth and 12.3 at 0.2 compared to control of 30.0; mutant spikes--18.7% at 0.1 ppth and 44.5% at 0.2 ppth compared to 0.04% for control; mutant plantlets--3.6% at 0.1 ppth and 10.1% at 0.2 ppth
COMMENTS: Tillering data based on 100 plants; sterility, seeds per ear, and plantlets per spike based on 100 spikes; mutations on basis of 1000 spikes; effects compared to gamma rays made
REFERENCE: Heslot, H., R. Ferrary, and J. Tempe, "The Relative Mutagenic Effects of Some Nitrosamines on Barley Seeds," Mutat. Res. 3:354-355 (1966).

<1891>
<1891>
CHEMICAL NAME: Carbamic acid, ethyl-, 3,4-dichlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and Preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--1; corn--2; broadleaf weeds--0; broadleaf crops--8
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1892>
CHEMICAL NAME: Carbamic acid, methyl nitroso-, ethyl ester
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.025 ppth
APPLICATION METHODS: Dry seeds (12% water) immersed in aqueous solution of chemical with continuous stirring at 25 C for 8 hr
EXPERIMENTAL CONDITIONS: After treatment, seeds washed in running tap water (1 min) and sown in greenhouse; survivors later transplanted to field; tillering, sterility, seeds per ear, plantlets per spike, mutations on spike basis, and mutant plantlets studied
EFFECTS: No significant difference compared to control; no mutations
COMMENTS: Tillering data based on 100 plants; sterility, seeds per ear, and plantlets per spike based on 100 spikes; mutations on basis of 1000 spikes; effects compared to gamma rays made
REFERENCE: Heslot, H., R. Ferrary, and J. Tempe, "The Relative Mutagenic Effects of Some Nitrosamines on Barley Seeds," Mutat. Res. 3:354-355 (1966).

<1893>
CHEMICAL NAME: Carbamic acid, methyl(phenylthio)-, 3-(1-methylpropyl)phenyl ester
CHEMICAL COMMON NAME: RE-11775
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 2.0 and 4.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight to moderate leaf damage with no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<1894>
CHEMICAL NAME: Carbamic acid, methyl-, phenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--0; corn--0; broadleaf weeds--0; broadleaf crops--2
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1895>
CHEMICAL NAME: Carbamic acid, methyl-, 2-chlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--0; corn--0; broadleaf weeds--0; broadleaf crops--2
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1896>
CHEMICAL NAME: Carbamic acid, methyl-, 2,3-dichlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--0; corn--0; broadleaf weeds--1; broadleaf crops--2
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1897>
CHEMICAL NAME: Carbamic acid, methyl-, 2,3,5-trimethylphenyl ester
CHEMICAL COMMON NAME: Landrin
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1, 2, and 4 lb/A
APPLICATION METHODS: In 7-in. bands over row and in drill hole with seed
EXPERIMENTAL CONDITIONS: Plano silt loam; plots--single 40-in. rows 40 ft long, randomized block design and 3 or 4 replicates; field studies; yields determined as indication of growth
EFFECTS: No influence on corn yield from 7-in. band application; drill hole application, 42.9, 59.7, and 71.7% yield reduction at 1, 2, and 4 lb/A, respectively
COMMENTS: Commonly used dosages, 0.75 to 1.0 lb/A
REFERENCE: Apple, J.W., "Response of Corn to Granular Insecticides Applied to the Row at Planting," J. Econ. Entomol. 64(5):1208-1211 (1971).

<1898>
CHEMICAL NAME: Carbamic acid, methyl-, 2,4-dichlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--0; corn--2; broadleaf weeds--0; broadleaf crops--2
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1899>
CHEMICAL NAME: Carbamic acid, methyl-, 2,5-dichlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--0; corn--0; broadleaf weeds--0; broadleaf crops--2
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1900>
CHEMICAL NAME: Carbamic acid, methyl-, 2,6-dichlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--0; corn--0; broadleaf weeds--0; broadleaf crops--2
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1901>
<1901>
CHEMICAL NAME: Carbamic acid, methyl-, 3-chlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--4; corn--1; broadleaf weeds--4; broadleaf crops--4
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1902>
CHEMICAL NAME: Carbamic acid, methyl-, 3,4-dichlorophenylmethyl ester
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Cantaloupe; Crabgrass (DIGITARIA sp.); Lespedeza (LESPEDEZA STRIATA); Lettuce (LACTUCA SATIVA); Plantain (PLANTAGO sp.); Sorrell, sheep (RUMEX ACETOSELLA); Cotton (GOSSYPIUM HIRSUTUM); Peanut (ARACHIS HYPOGAEA); Soybean (GLYCINE MAX); Oat, wild (AVENA FATUA); Foxtail, yellow (SETARIA GLAUCA); Cocklebur (XANTHIUM sp.); Pea, sweet (PISUM SATIVUM); Bean, snap (PHASEOLUS VULGARIS); Foxtail, green (SETARIA VIRIDIS); Pigweed (AMARANTHUS sp.)
EXPERIMENTAL DOSE: 0.5, 1.0, 2.0, 2.5, 5.0, and 10.0 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Ratings made 21 days after treatment
EFFECTS: Cocklebur, cotton, garden pea, peanut, snap bean, and soybean resistant at 10 kg/ha; cantaloupe, green foxtail, lespedeza, lettuce, and sheep sorrell susceptible at 5 kg/ha; barnyard grass and pigweed susceptible at 2.5 lb/A; wild oats susceptible at 2.0 kg/ha; crabgrass and yellow foxtail susceptible at 1.0 kg/ha; plantain susceptible at 0.5 kg/ha
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1903>
CHEMICAL NAME: Carbamic acid, methyl-, 4-chlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--3; corn--2; broadleaf crops--5; broadleaf weeds--6
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1904>
CHEMICAL NAME: Carbamic acid, methylphenyl-, 3,4-dichlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and Preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--0; corn--0; broadleaf weeds--0; broadleaf crops--1
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1905>
CHEMICAL NAME: Carbamic acid, N-(3-chloro-6-methylphenyl)-1-methylethyl ester
CHEMICAL COMMON NAME: CMIPC
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.4 to 819.2 ppmw (of soil)
APPLICATION METHODS: Added to soil in water solutions
EXPERIMENTAL CONDITIONS: Greenhouse study; soils--Yolo fine sandy loam, Yolo clay loam, and Egbert loam; persistence studied in container culture in which oats indicator plant was planted, harvested, replanted, etc on 4 to 8 wk cycle

<1905> CONT.
EFFECTS: At 6.4 ppmw and higher concentrations, herbicide persisted for 2 or 3 crop cycles
COMMENTS: Initial toxicity in order of decreasing toxicity was: fenuron and monuron, CIPC, dalapon and TCA, GMIPC, and TBA; comparative inactivation in order of most rapid to slowest inactivation, was: TCA, dalapon, CIPC, CMIPC, TBA, fenuron, and monuron
REFERENCE: Crafts, A.S. and H. Drever, "Experiments with Herbicides in Soils," Weeds 8(1):12-18 (1960).

<1906>
CHEMICAL NAME: Carbamic acid, N-(3-chlorophenyl)-, 1-methylethyl ester
PLANT: Waterweed, Brazilian (ANACHARIS DENSA)
EXPERIMENTAL DOSE: 5, 10, and 100 ppm
APPLICATION METHODS: Addition of solutions to jars in which plants were growing
EXPERIMENTAL CONDITIONS: Laboratory study; plants rooted for 2 wk before treatment solutions added; evaluation time--up to 21 days
EFFECTS: Effective control after 14 days at 100 ppm
COMMENTS: Brief description of laboratory method for screening water weed herbicides
REFERENCE: Hardcastle, W.S., "A Rapid Laboratory Method for Screening Herbicides against Aquatic Plants," Weeds 6(1):64-65 (1958).

<1907>
CHEMICAL NAME: Carbamic acid, N-(3,4-dichlorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: DIPC
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 500 micro M
APPLICATION METHODS: Addition to assay preparations of chloroplasts
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: Increased photochemical activity and chloroplast bleaching
COMMENTS: Dual wavelength spectrophotometry applied to observations of small spectral changes during biochemical reactions in intact tissue; based on principle that absorbance reading at wavelength of isobestic point of reaction fluctuates with time in same manner as reading at wavelength where an absorbance change due to reaction takes place
REFERENCE: Inoue, Y., Yaginuma, N., Ogawa, T., Konishi, K., and K. Shibata, "Spectral Changes of Chloroplasts as a Means to Examine Phytotoxic Effects of Herbicides," in Environmental Toxicology of Pesticides, F. Matsumura, G.M. Boush, and T. Misato (Eds.) Academic Press, New York and London, pp. 549-570 (1972).

<1908>
CHEMICAL NAME: Carbamic acid, phenyl-, ethyl ester
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 50 mg/sq ft; 10 ppm
EXPERIMENTAL CONDITIONS: Test 1--addition of 50 mg/sq ft to soil; test 2--10 ppm solution in contact with germinating seed
EFFECTS: No effect on charlock; oat germinated but then growth was arrested followed by death; higher ppm concentrations prevented oat germinations (specific concentrations not given)
COMMENTS: N-Butyl phenylcarbamate, ethyl O-methoxyphenylcarbamate, methyl phenylthiocarbamate, ethyl phenyl thiocarbamate, N-propyl phenylcarbamate, ethyl O-chlorophenylcarbamate, methyl phenylcarbamate, allyl phenylcarbamate, and N, N-di(carboethoxyaniline) activity also reported but no specific concentrations given; action of arylcarbamic esters on monocotyledonous plants and lack of action on dicotylledonous plants noted
REFERENCE: Templeman, W.G., and W.A. Sexton, "Effect of Some Arylcarbamic Esters and Related Compounds Upon Cereals and Other Plant Species," Nature 156:630 (1945).

<1909>
CHEMICAL NAME: Carbamic acid, phenyl-, 1-methylethyl ester
CHEMICAL COMMON NAME: IPC
PLANT: Bean, kidney (PHASEOLUS VULGARIS); Linseed (LINUM USITATISSIMUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.001 to 0.1%
APPLICATION METHODS: Postemergence spray; infield--100 gal/A; 0.2% cyclohexanone and Trifon B 1956 added
EXPERIMENTAL CONDITIONS: Greenhouse study (bean and flax), soil--Dickson grey-brown
EFFECTS: Reduced yield of barley as result of postemergence spray with no adverse effect on bean or flax; toxic to flax in preemergence application
COMMENTS: Wheat exhibited differential responses to phenoxyacetic acid compounds and isopropyl phenylcarbamate at different growth stages; applications of four phenoxyacetic acid compounds to wheat at different stages of development, from late seedling to flowering, showed grain yields reduced most markedly by applications in seedling stage; isopropyl phenylcarbamate had no effect on wheat in late seedling or tillering stages, but severely depressed yield of grain when applied at flowering; barley responded similarly; higher concentrations applied to wheat at pre-shooting also reduced grain yields
REFERENCE: Moore, R.M., "Differential Effects of Certain Phenoxyacetic Acid Compounds and Phenylcarbamates on Plant Species," Austral. J. Agric. Res. 1:401-412 (1950)

<1910>
CHEMICAL NAME: Carbamic acid, phenyl-, 1-methylethyl ester
CHEMICAL COMMON NAME: IPC
PLANT: Soybean (GLYCINE MAX); Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 50 lb/A
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Field study; leaching and degradation experiments over time periods up to 3 mo
EFFECTS: Reduced germination of soybeans and oats for 51 and 40 days, respectively
COMMENTS: 2,4-D and IPC when applied in excessive amounts, readily leached from soil; when leaching

<1910>
<1910> CONT.
prevented, former compound inactivated; 2-methyl-4-chlorophenoxyacetic acid and 2,4,5-trichlorophenoxyacetic acid much more persistent, and herbicidally active for longer period of time than 2,4-D
REFERENCE: DeRose, H. R., "Persistence of Some Plant Growth-Regulators When Applied to the Soil in Herbicidal Treatments," Bot. Gaz. 106:583-589 (1946).

<1911>
CHEMICAL NAME: Carbamic acid, phenyl-, 1-methylethyl ester
CHEMICAL COMMON NAME: Propham
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-4) and 10(-5)M; moderate control at 10(-6)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-62 (1974).

<1912>
CHEMICAL NAME: Carbamic acid, phenyl-, 1-methylethyl ester
CHEMICAL COMMON NAME: Propham
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bromegrass, smooth (BROMUS INERMIS); Orchard grass (DACTYLIS GLOMERATA); Wheatgrass, crested (AGROPYRON CRISTATUM)
EXPERIMENTAL DOSE: 3,4, 4.5 and 5.6 kg/ha
APPLICATION METHODS: Postemergence application in water at spray volume of 127 l./ha and pressure of 2.1 kg/cm(2) in September
EXPERIMENTAL CONDITIONS: Palouse silt loam; all grasses treated in seedling stage with 1.1 kg/ha bromoxynil to control broadleaf weeds; randomized block experimental design with 3 to 4 replications
EFFECTS: 3.4 and 4.5 kg/ha did not significantly reduce seed yield of any plant; 5.6 kg/ha gave a significant (but only 26% reduction) seed yield reduction in orchardgrass but in no other plants
REFERENCE: Canode, C.L., "Tolerance of Five Cool-Season Perennial Grasses to Selected Herbicides," Agron. J. 66:683-686 (1974).

<1913>
CHEMICAL NAME: Carbamic acid, phenyl-, 1-methylethyl ester
CHEMICAL COMMON NAME: IPC
PLANT: Bromegrass, downy (BROMUS TECTORUM); Wheatgrass, intermediate (AGROPYRON INTERMEDIUM); Bluegrass, Kentucky (POA PRATENSIS); Bromegrass, smooth (BROMUS INERMIS)
EXPERIMENTAL DOSE: 2.0 to 16.0 lb/A; Liquid and G
APPLICATION METHODS: Postemergence spray; 20 or 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; 2 locations in WA; time period--1958 to 1960
EFFECTS: At 4.0 and 8.0 rates, effective control for 1 to 2 yr of downey brome with no damage to wheatgrass but reduced yield of bluegrass and smooth brome seed; liquid formulation more active than granular
COMMENTS: IPC and CIPC most effective herbicides for controlling downy brome without serious injury to perennial grasses grown for seed production; endothal gave good downy brome control
REFERENCE: Canode, C.L., W.C. Robocker, and T.J. Muzik, "Grass Seed Production as Influenced by Chemical Control of Downy Brome," Weeds 10(3):216-219 (1962).

<1914>
CHEMICAL NAME: Carbamic acid, phenyl-, 1-methylethyl ester
CHEMICAL COMMON NAME: IPC
PLANT: Bluegrass, annual (POA ANNUA); Crabgrass, large (DIGITARIA SANGUINALIS); Quackgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 3.4 to 40.8 mg/lb of soil; 2.0 lb/A
APPLICATION METHODS: Preemergence addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Severe reduction of bluegrass and quackgrass germination; moderate reduction of crabgrass germination
COMMENTS: IPC affected growth of grass seedlings in varying degrees, depending on method of application; when applied to surface of soil at a rate equivalent to 2 pounds/acre, IPC prevented emergence of quack grass seedlings, while 91 per cent of seeds planted in comparable untreated soil emerged and grew
REFERENCE: Mitchell, J.W. and P.C. Marth, "Sensitivity of Grasses and Some Crop Plants to Isopropyl-N-Phenyl Carbamate," Sci. 15-17 (1947).

<1915>
CHEMICAL NAME: Carbamic acid, phenyl-, 1-methylethyl ester
CHEMICAL COMMON NAME: IPC
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Onion (ALLIUM CEPA); Tomato (LYCOPERSICON ESCULENTUM); Pepper (CAPSICUM FRUTESCENS); Cucumber (CUCUMIS SATIVUS); Bean, hyacinth (DOLICHOS LAB LAB); Broccoli (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 4.0, 6.0, and 8.0 lb/A; G
APPLICATION METHODS: Preplant incorporated (2 in. depth) by rotary cultivator
EXPERIMENTAL CONDITIONS: Field study; 3 CA locations; furrow irrigation; soils--Moreno fine sandy loam and Ramona sandy loam
EFFECTS: At 4.0 lb/A, moderate control of weeds with reduced crop emergence and vigor or kill of all crops except lettuce and broccoli
COMMENTS: Herbicides for vegetables in three desert areas managed under furrow irrigation exhibited extreme

<1915> CONT.
variability between locations in herbicide response and crop toxicity; no treatments provided reasonable compromise between weed control and crop injury at any one location; none met this requirement at each location
REFERENCE: Lyons, J.M. and F.L. Whiting, "Incorporated Preemergence Granular Herbicides on Vegetable Crops," Weeds 13(3):242-245 (1965).

<1916>
CHEMICAL NAME: Carbamic acid, phenyl-, 1-methylethyl ester
CHEMICAL COMMON NAME: Propham
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1.0 to 10.0 ppm
APPLICATION METHODS: Addition to culture solution
EXPERIMENTAL CONDITIONS: Environmental chamber; hydroponic culture; whole roots or one-third of roots immersed in test solutions; pH--7.0; temperature--16 to 23 C; RH--50 to 70%; photoperiod--12 hr
EFFECTS: Reduced growth
COMMENTS: Propham, chlorpropham, atratone and 2,3,6-TBA killed plants whether application was to one-third or all roots; roots in direct contact with propham, chlorpropham and 2,3,6-TBA deformed or killed, while roots in uncontaminated solution remained healthy; atratone and chlorpropham transmitted to roots not in toxic solution
REFERENCE: Lyndsay, R.V. and G.S. Hartley, "Studies of the Response of Plants to Root-Applied Herbicides," Weed Res. 3(3):195-204 (1963).

<1917>
CHEMICAL NAME: Carbamic acid, phenyl-, 1-methylethyl ester
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.1 g/sq yd in 50 ml solution
APPLICATION METHODS: Aqueous spray applied in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: No significant effects
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<1918>
CHEMICAL NAME: Carbamic acid, phenyl-, 1-methylethyl ester
CHEMICAL COMMON NAME: IPC
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.4 to 819.2 ppmw (of soil)
APPLICATION METHODS: Added to soil in water solutions
EXPERIMENTAL CONDITIONS: Greenhouse study; soils--Yolo fine sandy loam, Yolo clay loam, and Egbert loam; persistence studied in container culture in which oats indicator plant was planted, harvested, replanted, etc on 4 to 8 wk cycle
EFFECTS: At 1.6 ppmw or higher concentrations, persisted for 2 or more planting cycles
COMMENTS: Initial toxicity in order of decreasing toxicity was: fenuron and monuron, CIPC, dalapon and TCA, CMIPC, and TBA; comparative inactivation in order of most rapid to slowest inactivation, was; TCA, dalapon, CIPC, CMIPC, TBA, fenuron, and monuron
REFERENCE: Crafts, A.S. and H. Drever, "Experiments with Herbicides in Soils," Weeds 8(1):12-19 (1960).

<1919>
CHEMICAL NAME: Carbamic acid, phenyl-, 1-methylethyl ester
CHEMICAL COMMON NAME: IPC
PLANT: Bluegrass, annual (POA ANNUA); Crabgrass, large (DIGITARIA SANGUINALIS); Bermudagrass, common (CYNODON DACTYLON); Sorghum, amber; Sudan grass (SORGHUM VULGARE); Millet (PANICUM sp.); Bluegrass, annual (POA ANNUA); Barley (HORDEUM VULGARE); Fescue (FESTUCA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Redtop (AGROSTIS ALBA); Timothy (PHLEUM PRATENSE); Orchard grass (DACTYLIS GLOMERATA); Quackgrass (AGROPYRON REPENS); Onion (ALLIUM CEPA); Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 2.0 to 100.0 lb/A
APPLICATION METHODS: Addition to soil (equivalent to preemergence application)
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: At 2.0 to 5.0 lb/A, reduced germination of all test plants except crabgrass, bermudagrass, sorghum, Sudan grass, millet, onion, and sugar beet; growth of crabgrass strongly reduced
COMMENTS: May be useful in reducing the population of some weedy grasses, such as quack grass
REFERENCE: Mitchell, J.V. and P.C. Marth, "Sensitivity of Grasses and Some Crop Plants to Isopropyl-N-Phenyl Carbamate," Sci. 106:15-17 (1947).

<1920>
CHEMICAL NAME: Carbamic acid, phenyl-, 3,4-dichlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and Preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--0; corn--1; broadleaf weeds--0; broadleaf crops--4

<1920>
<1920> CONT.
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1921>
CHEMICAL NAME: Carbamic acid, phenylmethyl-, 3,4-dichlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and Preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--0; corn--0; broadleaf weeds--0; broadleaf crops--2
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1922>
CHEMICAL NAME: Carbamic acid, 1-methylethyl-, 3,4-dichlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and Preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--1; corn--1; broadleaf weeds--1; broadleaf crops--3
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1923>
CHEMICAL NAME: Carbamic acid, 2-methylpropyl-, 3,4-dichlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and Preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--0; corn--0; broadleaf weeds--0; broadleaf crops--0
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1924>
CHEMICAL NAME: Carbamic acid, 2-propen-1-yl-, 3,4-dichlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg/ha
APPLICATION METHODS: Postemergence and Preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--0; corn--1; broadleaf weeds--0; broadleaf crops--6
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1925>
CHEMICAL NAME: Carbamic acid, 3,4-dichlorophenylmethyl ester
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Millet (PANICUM sp.); Bean, snap (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Mustard (BRASSICA sp.); Pigweed (AMARANTHUS sp.); Broadleaf weeds; Corn (ZEA MAYS); Grasses; Broadleaf crops
EXPERIMENTAL DOSE: Postemergence--4 kg/ha; preemergence--5 kg//ha
APPLICATION METHODS: Postemergence and preemergence
EXPERIMENTAL CONDITIONS: Herbicidal activities of various phenylmethyl carbamic acids tested; data taken 10 days after treatment; rating system--0 (no injury), 1 (slight injury), 2 (moderate injury), 3 (severe injury), and 4 (complete kill)
EFFECTS: Grasses--4; corn--1; broadleaf weeds--5; broadleaf crops--6
COMMENTS: 3,4-phenylmethyl ester of methylcarbamic acid was most effective compound tested; mustard and pigweed data totaled as broadleaf weeds; bean and tomato data totaled as broadleaf crops; ryegrass and millet data totaled as grasses
REFERENCE: Herrett, R.A. and R.V. Berthold, "3,4-Dichlorobenzyl Methylcarbamate and Related Compounds as Herbicides," Science 149:191-193 (1965).

<1926>
CHEMICAL NAME: Carbamodithioc acid, N-decyl-, sodium salt
PLANT: Barley (HORDEUM VULGARE); Pea, sweet (PISUM SATIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.012, 0.003, 5.0, and 10.0 mM
APPLICATION METHODS: Filter paper barley seed germination, pea seedlings grown in medium containing test compound; treatment to tomato foliage (5 and 10 mM sprayed til runoff) and to roots of tomato
EXPERIMENTAL CONDITIONS: Barley seeds germination on treated filter paper monitored; emergence of pea seedlings from treated growth medium also monitored; effects of foliar and root application to tomato observed
EFFECTS: Barley--50% germination at 0.012 mM (value extrapolated); pea-50% emergence at 0.003 mM; tomato--no phytotoxicity from foliage treatment at 5 and 10 mM
COMMENTS: Indication that treatment of cut tomato stems or to roots of tomato caused wilting, leaf necrosis and stem collapse from many of the treatments tested but specific treatments or compounds not mentioned
REFERENCE: Richardson, L.T. and G.D. Thorn, "Comparative Fungitoxicity and Phytotoxicity of Sodium N-Methyl-dithiocarbamate and its n-Alkyl Homologues," Can. J. Bot. 47:241-245(1969)

<1927>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Goosegrass (ELEUSINE INDICA); Love-grass (ERAGROSTIS PECTINICEA); Nutsedge, purple (CYPERUS ROTUNDUS); Pigweed, spiny (AMARANTHUS SPINOSUS); Apple of Peru (NICANDRA PHYSOLODES); Purslane, common (PORTULACA OLERACEA); Floras paintbrush (EMILIA SONCHIFOLIA); Spurge, garden (EUPHORBIA HIRTA); Cabbage (BRASSICA OLERACEA); Cabbage, Chinese (BRASSICA PEKINENSIS); Mustard, Chinese (BRASSICA JUNCEA); Mustard, cabbage (BRASSICA CHINENSIS); Radish (RAPHANUS SATIVUS); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of all weeds with slight to moderate damage of crop plants
COMMENTS: Vegadex (CDEC) and treflan (trifluralin) suitable herbicides while dymid very toxic to crop; selectivity not due to a single factor but an interaction of morphological, physiological and genetical factors which made particular crop tolerant or susceptible
REFERENCE: Vahidy, A.A., "Differential Tolerance within Certain Cruciferous Crops to Vegadex, CIPC, Dymid and Treflan," Pak. J. Bot. 5(1):79-85 (1973).

<1928>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Pigweed (AMARANTHUS sp.); Popolo (SOLANUM NIGRUM); Floras paintbrush (EMILIA SONCHIFOLIA); Richardia (RICHARDIA SCABRA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.0 and 6.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 4% EC Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Moderate to effective control of weeds except popolo (no control) with good corn tolerance
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<1929>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS) ; Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Crabgrass, large (DIGITARIA SANGUINALIS); Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 2.24 and 3.36 kg/ha
APPLICATION METHODS: Preemergence application with an Oxford Precision Sprayer at a rate of 280 l./ha and at 2 kg/cm2 pressure
EXPERIMENTAL CONDITIONS: Sandy loam soil; spinach plants 10 cm apart in rows 1 m apart; plot -- 3 rows 3 m long; 4 replications of each treatment; weeds per 930 cm were counted; plants harvested from center of each plot 37 days after emergence
EFFECTS: Unsatisfactory weed control; no significant effect on plant nitrate accumulation

<1929>
<1929> CONT.
COMMENTS: Increase in plant nitrate can result from soil or lowered nitrate reductase activity; authors think that decrease in some phase of nitrate reduction by herbicide action is responsible for nitrate accumulation
REFERENCE: Cantliffe, D.J. and S.C. Phatak, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Spinach," Hortscience 9(5): 470-472 (1974).

<1930>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Yew (TAXUS INTERMEDIA); Chickweed, common (STELLARIA MEDIA); Primrose, cut-leaf evening (OENOTHERA LACINIATA); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Posttransplant spray; 374 l./ha at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--low flatwood fine sands; subsurface irrigation; time period--1970 to 1974
EFFECTS: Moderate to effective control of all weeds with no adverse effect on cabbage yield
COMMENTS: Most effective weed control obtained with alachlor, alachlor + CDEC, alachlor + DCPA, and DCPA + nitrofen; DCPA effective in controlling dock and chickweed, but controlled evening primrose less effectively; nitrofen provided excellent control of dock and fair to good control of evening primrose.
REFERENCE: Shumaker, J.R., "Chemical Weed Control in North Florida Cabbage," Fla. State Hort. Soc. 87:170-174 (1974).

<1931>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Purslane, common (PORTULACA OLERACEA); Plants
EXPERIMENTAL DOSE: 4.0 and 6.0 lb/A
APPLICATION METHODS: Preemergence incorporated (by irrigation); preplant incorporated (disking); pretransplant
EXPERIMENTAL CONDITIONS: Field study; irrigation (sprinkler and furrow); time period--1964, 1965, and 1968
EFFECTS: Effective control of weeds at 6.0 lb/A
REFERENCE: Whiting, F.L., L.F. Lippert, and J.M. Lyons, "Chemical Weed Control in Peppers," Calif. Agric. 24(7):8-9 (1970).

<1932>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: Sulfallate
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete or near complete control of shoot emergence at 10(-4) and 10(-5)M; poor control at 10(-6)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1933>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: Sulfallate
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in sorghum and cucumber but 50% or greater in oat at 1 ppm, 50% or greater in all plants at 10 ppm; shoot--50% or greater inhibition in sorghum but less than 50% in oat at 1 ppm, 50% or greater in sorghum and oat at 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<1934>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 2.0 to 16.0 lb/A
APPLICATION METHODS: Added to soil and mixed
EXPERIMENTAL CONDITIONS: Germination chamber; temperature--75 F (day) and 72 F night; paper carton culture; soil--Plainfield sand; evaluation time--up to 54 da
EFFECTS: Slightly stimulated germination and reduced seedling growth
COMMENTS: Seed germination influenced only very slightly, or not at all, by variety of soil-incorporated herbicides; in contrast, all but one of soil-incorporated herbicides caused seedling mortality and

<1934> CONT.
decreased dry-weight production of seedlings; greatest toxicity observed at highest dosages used; EPTC and CDAA at high dosages very toxic to tree seedlings, whereas DCPA showed no deleterious effects at any dosage
REFERENCE: Kozlowski, T.T. and J.H. Torrie, "Effect of Soil Incorporation of Herbicides on Seed Germination and Growth of Pine Seedlings," Soil Sci. 100(2):139-146 (1965).

<1935>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.0 to 18.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: Effective weed control with no adverse effect on cotton at 9.0 lb/A for 60 day period
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<1936>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Bluegrass, annual (POA ANNUA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preplant solution soak
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Puyallup fine sandy loam; pH--5.8; temperature--approx 60 F
EFFECTS: Slight to moderate control of bluegrass with no adverse effect on bentgrass
COMMENTS: Dacthal, betasan, dipropalin, trifluralin, and enide significantly controlled annual bluegrass for periods of 9 to 12 weeks; dacthal and betasan completely nonphytotoxic to mature turf
REFERENCE: Goss, R.L., "Preemergence Control of Annual Bluegrass (POA ANNUA L.)," J. Agron. 56(1):479-481 (1964).

<1937>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate weed control with no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<1938>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Pine, red (PINUS RESINOSA); Purslane, common (PORTULACA OLERACEA); Carpetweed (MOLLUGO VERTICILLATA); Weeds
EXPERIMENTAL DOSE: 4, 8, 16, and 32 lb/A
APPLICATION METHODS: Postemergence spray--one quart to each plot
EXPERIMENTAL CONDITIONS: Pine stock--spring 1960 germination (1-0 stock), spring 1959 germination (2-0 stock), and spring 1958 germination (2-1 stock); randomized complete block design, 4 by 2.7 ft plots; field studies; Plainfield sand soil
EFFECTS: 1-0 stock--significant weed reduction but significant effect on tree survival or dry weight at 16 and 32 lb/A; 2-0 stock--no significant effect on dry weight of seedlings at 16 and 32 lb/A; 1-2 stock--significant weed reduction at 4 and 8 lb/A but not as good as 16 and 32 lb/A, no significant difference in dry weight of seedling from control
COMMENTS: Weed infestation slight; weeds not tabulated separately
REFERENCE: Winget, C.H., T.T. Kozlowski, and J.E. Kuntz, "Effects of Herbicides on Red Pine Nursery Stock," Weeds 11(2):87-90 (1963).

<1939>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Onion (ALLIUM CEPA); Tomato (LYCOPERSICON ESCULENTUM); Pepper (CAPSICUM FRUTESCENS); Cucumber (CUCUMIS SATIVUS); Bean, hyacinth (DOLICHOS LAB LAB); Broccoli (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 4.0, 6.0, and 8.0 lb/A; G
APPLICATION METHODS: Preplant incorporated (2 in. depth) by rotary cultivator
EXPERIMENTAL CONDITIONS: Field study; 3 CA locations; furrow irrigation; soils--Moreno fine sandy loam and Pamona sandy loam
EFFECTS: At 4.0 lb/A, effective weed control with reduced crop emergence and vigor or kill for all crops except corn, lettuce and tomato (slight effects)

<1939>
<1939> CONT.
COMMENTS: Herbicides for vegetables in three desert areas managed under furrow irrigation exhibited extreme variability between locations in herbicide response and crop toxicity; no treatments provided reasonable compromise between weed control and crop injury at any one location; none met this requirement at each location
REFERENCE: Lyons, J.M. and F.L. Whiting, "Incorporated Preemergence Granular Herbicides on Vegetable Crops," Weeds 13(3):242-245 (1965).

<1940>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: Vegadex
PLANT: Azalea (RHODODENDRON INDICUM); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 8.0 lb/A; vermiculite carrier
APPLICATION METHODS: Broadcast
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate weed control with no adverse effect on azalea
COMMENTS: PCP, DN, and CIPC superior at high rates against summer weeds in azalea beds, whereas fall weeds best controlled by CIPC, diuron, Geigy 448, and CDEC, no apparent foliar or other damage resulted from any treatments
REFERENCE: Chappell, W.E., "The Use of Granular Herbicides in Azaleas," Proc. Southern Weed Conf. 10:105-107 (1957).

<1941>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants; Pepper, pimento
EXPERIMENTAL DOSE: 6 and 8 lb/A
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Effective weed control with no adverse effect on tomato and pimento
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<1942>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Goosegrass (ELEUSINE INDICA); Love-grass (ERAGROSTIS PECTINICEA); Nutsedge, purple (CYPERUS ROTUNDUS); Pigweed, spiny (AMARANTHUS SPINOSUS); Apple of Peru (NICANDRA PHYSOLODES); Purslane, common (PORTULACA OLERACEA); Floras paintbrush (EMILIA SONCHIFOLIA); Spurge, garden (EUPHORBIA HIRTA); Cabbage (BRASSICA OLERACEA); Cabbage, Chinese (BRASSICA PEKINENSIS); Mustard (BRASSICA CAMPESTRIS); Mustard, cabbage (BRASSICA CHINENSIS); Radish (RAPHANUS SATIVUS); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; evaluation time--3 and 7 wk; sprinkler irrigation
EFFECTS: Moderate to effective control of weeds with slight damage to crops except mustard and Cauliflower (moderate damage)
COMMENTS: Vegadex and treflan found suitable herbicides while dymid very toxic to crop; selectivity not due to single factor but interaction of morphological, physiological, and genetical factors which made particular crop tolerant or susceptible
REFERENCE: Vahidy, A.A., "Differential Tolerance within Certain Cruciferous Crops to Vegadex, CIPC, Dymid and Treflan," Pak. J. Bot. 5(1):79-85 (1973).

<1943>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Broadleaf weeds; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 3.36 kg/ha
APPLICATION METHODS: Pre-plant incorporated, preemergence, or postemergence sprays; 280 l./ha at 2 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1972 and 1973
EFFECTS: Slight weed control with no adverse effect on beet
COMMENTS: Broadleaf weed control achieved in table beets with cycloate, CNP, pebulate, lenacil, pyrazon, IMC 3950, TCA + pyrazon, and pebulate followed by pyrazone; fair weed control achieved with EPTC, propachlor, and solubor; poor weed control obtained from CDEC, chlorpropham, pyrazon, and TCA; yields expressed as $/ha or tons/ha reduced by chlorpropham, lenacil, CNP, and TCA
REFERENCE: Phatak, S.C. and D.J. Cantliffe, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Table Beets," Hortsci. 10(3):271-273 (1975).

<1944>
CHEMICAL NAME: Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
CHEMICAL COMMON NAME: CDEC
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 4.28 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as

<1944> CONT.
root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<1945>
CHEMICAL NAME: Carbamodithioic acid, dipropyl-, 2,4-dinitrophenyl ester
CHEMICAL COMMON NAME: CIBA C14421
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 35.7 kg/ha
APPLICATION METHODS: Applied 4 times first 2 years
EXPERIMENTAL CONDITIONS: 2.7x6.4 m plots, randomized block design with 4 replications; Frilsham Series soil (brown earth in loamy drift over chalky head); 5-year experiment, 1969-1973; yield measurements from center of each plot; 377 kg/ha N per year as fertilizer; irrigation when soil moisture deficit reached 25 mm
EFFECTS: No injury--yields same or greater than control
COMMENTS: CIBA C14421-Nematicide, discontinued after 2 years because of ineffectiveness
REFERENCE: Henderson, I.F. and R.O. Clements, "The Effect of Pesticides on the Yield and Botanical Composition of a Newly-Sown Ryegrass Ley and of an Old Mixed Pasture," J. Br. Grassl. Soc. 29:185-190 (1974).

<1946>
CHEMICAL NAME: Carbamodithioic acid, methyl-
CHEMICAL COMMON NAME: SMDC
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 75 and 150 lb/A
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: At 75 lb/A, effective weed control (one year) with slight-moderate damage of corn and no adverse effect on cotton or soybeans; no weed control in 1958
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but fairly safe on corn; MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(isopropylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<1947>
CHEMICAL NAME: Carbamodithioic acid, methyl-
CHEMICAL COMMON NAME: Metham
PLANT: Eucalyptus, red gum (EUCALYPTUS CAMALDULENSIS); Willow (SALIX sp.)
EXPERIMENTAL DOSE: 100 to 1000 mg/l. and 5000 mg/l.
APPLICATION METHODS: Exposed to plant roots in 1.0 liter herbicide solution for 1 hr.; water soluble concentrate and vapam + surfactant formulations
EXPERIMENTAL CONDITIONS: Pot studies; plastic pot (holes in bottom) with plant placed on top of another pot containing soil; after root growth through holes into second pot, plants carefully removed and placed on top of pot containing herbicide solution; 1-hr herbicide exposure
EFFECTS: Willow--roots killed at 100 to 1000 mg/l. but serious plant damage; eucalyptus--500 mg/l. failed to kill roots, 5000 mg/l. killed all but one large root with slight foliage injury to one plant
COMMENTS: Metham at 500 mg/l. and dichlobenil at 10 mg/l.--good kill of eucalyptus roots, negligible foliage injury
REFERENCE: Ahrens, J.F., O.A. Leonard, and N.R. Townley, "Chemical Control of Tree Roots in Sewer Lines," J. Water Pollut. Control Fed. 42(9):1643-1655 (1970).

<1948>
CHEMICAL NAME: Carbamodithioic acid, methyl-
CHEMICAL COMMON NAME: Metham
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Weeds; Foxtail (SETARIA sp.); Crabgrass (DIGITARIA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Dandelion (TARAXACUM OFFICINALE); Purslane, common (PORTULACA OLERACEA); Pigweed, prostrate (AMARANTHUS GRAECIZANS); Medick, black (MEDICAGO LUPULINA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 0.5, 1.0, and 1.5 lb/100 sq ft
APPLICATION METHODS: Preplanting treatments in 10 gal water/100 sq ft followed by 15 gal water/100 sq ft
EXPERIMENTAL CONDITIONS: June 12 applications, 5 replications; 3 X 8 ft plots; field study; 1956 and 1957 test years
EFFECTS: 1956--11.6 and 15.2 weeds/6 sq ft at 1.0 and 1.5 lb, respectively; 1957--2.3 and 0 weeds/6 sq ft at 0.5 and 1.0 lb, respectively; check--45.2 and 132.3 weeds/6 sq ft in 1956 and 1957, respectively; no indication of chrysanthemum injury
COMMENTS: Weed species considered together for tabulations; weed control rated highly significant
REFERENCE: Stadtherr, R.J. and R.E. Widmer, "Chemical Weed Control in Garden Chrysanthemums," Weeds 7(1):82-87 (1956).

<1949>
<1949>
CHEMICAL NAME: Carbamodithioic acid, methyl-
CHEMICAL COMMON NAME: Metham
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: Effective initial control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<1950>
CHEMICAL NAME: Carbamodithioic acid, methyl-
CHEMICAL COMMON NAME: Metham-sodium
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.0 pt/50 sq ft; 32.7% ai
APPLICATION METHODS: "Fumigation" by enclosing potted tomatoes (growing in treated soil) in polyethylene bags
EXPERIMENTAL CONDITIONS: Greenhouse study; summary of studies in 18 commercial greenhouses; exposure time--7 da; evaluation time--up to 8 wk
EFFECTS: Moderate damage to tomato; 10 wk required for safe planting after treatment
COMMENTS: Soil samples taken 25 weeks after application generally caused severe curling and leaf drop and sometimes death; samples taken from properly ventilated soil 8 weeks after application caused only slight curling of few leaves
REFERENCE: Hunnam, D. and P. Waddingston, "Factors Affecting the Phytotoxicity of Metham Sodium to Tomatoes," Plant Pathol. 10(3):118-121 (1961).

<1951>
CHEMICAL NAME: Carbamodithioic acid, methyl-
CHEMICAL COMMON NAME: Metham
PLANT: Soursob (OXALIS PES-CAPRAE)
EXPERIMENTAL DOSE: 200, 300, and 400 lb/A
APPLICATION METHODS: Preemergence (400 lb/A), emergence (400 lb/A), early postemergence (300 lb/1A), and late postemergence (200 lb/A); 4 lb/gal concentration
EXPERIMENTAL CONDITIONS: Plots, 4 sq yd; one plot per treatment; bulbs counted and weighed as measure of control
EFFECTS: Good control with early postemergence and late postemergence treatments
COMMENTS: Trade name Vapam; not a selective herbicide; disadvantages for large scale use--expensive and requires irrigation
REFERENCE: Marinos, N.G., "The Control of Soursob (OXALIS PES-CAPRAE) with Vapam," J. Aust. Inst. Agric. Sci.: 259-261(1958).

<1952>
CHEMICAL NAME: Carbamodithioic acid, methyl-
CHEMICAL COMMON NAME: Metham
PLANT: Barley (HORDEUM VULGARE); Pea, sweet (PISUM SATIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.0009, 0.004, 5.0, and 10.0 mM
APPLICATION METHODS: Filter paper barley seed germination, pea seedlings grown in medium containing test compound; treatment to tomato foliage (5 and 10 mM sprayed til runoff) and to roots of tomato
EXPERIMENTAL CONDITIONS: Barley seeds germination on treated filter paper monitored; emergence of pea seedlings from treated growth medium also monitored; effects of foliar and root application to tomato observed
EFFECTS: Barley--50% germination at 0.0009 mM; pea-50% emergence at 0.004 mM; tomato--no phytotoxic effect from foliage treatment at 5 and 10 mM
COMMENTS: Indication that treatment of cut tomato stems or to roots of tomato caused wilting, leaf necrosis and stem collapse observed from many of the treatments tested but specific treatments or compounds not mentioned
REFERENCE: Richardson, L.T. and G.D. Thorn, "Comparative Fungitoxicity and Phytotoxicity of Sodium N-Methyl-dithiocarbamate and its n-Alkyl Homologues," Can. J. Bot. 47:241-245(1969)

<1953>
CHEMICAL NAME: Carbamodithioic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: Vapam
PLANT: Sedge (CYPERUS LONGUS); Panic-grass (PANICUM LONGUM); Purslane, common (PORTULACA OLERACEA); Bindweed, field (CONVOLVULUS ARVENSIS); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 40 to 100 ml/sq m
APPLICATION METHODS: Soil addition (drench)
EXPERIMENTAL CONDITIONS: Field study; Egypt
EFFECTS: Effective control of bermudagrass at 70 ml rate but no effect on remaining weeds
COMMENTS: CYNODON DACTYLON eliminated from soil on application of Vapam; other weeds such as CYPERUS LONGUS, CONVOLVULUS ARVENSIS, PORTULACA OLERACEA, and PANICUM COLONUM not affected by any of concentrations used
REFERENCE: Mohamed, H.A., "Testing the Effect of Vapam on Weeds and Fungi Under Field Conditions," Plant Dis. Rept. 47(4):281-283 (1963).

<1954>
CHEMICAL NAME: Carbamodithioic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: Metham
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 450 lb/A
APPLICATION METHODS: Postemergence, 1 treatment
EXPERIMENTAL CONDITIONS: Screening trials--50 sq ft plots, 2 replications in a randomized block design; field test--only promising herbicides tested
EFFECTS: Initial control--99%; regrowth after 3 months--2%; seedling growth after 3 months--numerous
REFERENCE: Youngner, V.B. and J.R. Goodin, "Control of PENNISETUM CLANDESTINUM, Kikuyugrass," Weeds 9(2):238-242 (1961).

<1955>
CHEMICAL NAME: Carbamodithioic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: Vapam
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 110 gal/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control with no regrowth (3 mo)
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<1956>
CHEMICAL NAME: Carbamodithioic acid, methyl-, monosodium salt
CHEMICAL COMMON NAME: Vapam
PLANT: Plants; Tobacco (NICOTIANA sp.)
EXPERIMENTAL DOSE: 1.0 lb/100 sq ft
APPLICATION METHODS: Addition to soil by surface drench and by injection (6 in. depth)
EXPERIMENTAL CONDITIONS: Field study; time period--1955 and 1956
EFFECTS: Moderate weed control with no adverse effect on tobacco
COMMENTS: Vapam, Mylone, and N521 used alone and in combination with calcium cyanamid gave effective weed and nematode control in tobacco plant beds; no stunting or other adverse effect on tobacco plants at two experimental plant bed locations; at one of three locations in cooperative trials, tobacco plants retarded following treatment with Vapam and N521; no apparent relation to physical conditions of the soil or to cropping history where stunting occurred; weed control good at two of three grower locations
REFERENCE: Graham, T.W., "Weed and Root Knot Control in Tobacco Plant Beds by Surface Drench and Other Treatments," Plant Disease Rept. 40(12):1041-1044 (1956).

<1957>
CHEMICAL NAME: Carbamodithioic acid, methyl-, sodium salt
PLANT: Plants; Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 1.0 to 3.0 qt/100 sq ft
APPLICATION METHODS: Addition to soil (drench)
EXPERIMENTAL CONDITIONS: Field study; drench applied one month before seeding
EFFECTS: Effective weed control at highest rates with no adverse effect on cabbage yield
COMMENTS: VPM as drench resulted in good weed control and almost perfect control of clubroot of Chinese cabbage in naturally-infested fields; broadcast application of VPM followed by application of water by overhead irrigation 1 month prior to setting of cabbage and cauliflower plants resulted in good plant growth and satisfactory clubroot and weed control
REFERENCE: Cetas, R.C., "The Use of Sodium Methyl Dithiocarbamate for the Control of Clubroot of Crucifers," Plant Dis. Rept. 42(3):324-328 (1958).

<1958>
CHEMICAL NAME: Carbamodithioic acid, N-butyl-, sodium salt
PLANT: Barley (HORDEUM VULGARE); Pea, sweet (PISUM SATIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.0025, 0.0095, 5.0, and 10.0 mM
APPLICATION METHODS: Filter paper barley seed germination, pea seedlings grown in medium containing test compound; treatment to tomato foliage (5 and 10 mM sprayed til runoff) and to roots of tomato
EXPERIMENTAL CONDITIONS: Barley seeds germination on treated filter paper monitored; emergence of pea seedlings from treated growth medium also monitored; effects of foliar and root application to tomato observed
EFFECTS: Barley--50% germination at 0.0025 mM; pea--50% emergence at 0.0095 mM; tomato--no phytotoxicity from foliage spray at 5 and 10 mM
COMMENTS: Indication that treatment of cut tomato stems or to roots of tomato caused wilting, leaf necrosis and stem collapse from many of the treatments tested but specific treatments or compounds not mentioned
REFERENCE: Richardson, L.T. and G.D. Thorn, "Comparative Fungitoxicity and Phytotoxicity of Sodium N-Methyl-dithiocarbamate and its n-Alkyl Homologues," Can. J. Bot. 47:241-245(1969)

<1959>
<1959>
CHEMICAL NAME: Carbamodithioic acid, N-ethyl-, sodium salt
PLANT: Barley (HORDEUM VULGARE); Pea, sweet (PISUM SATIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.0015, 0.0075, 5.0, and 10.0 mM
APPLICATION METHODS: Filter paper barley seed germination, pea seedlings grown in medium containing test compound; treatment to tomato foliage (5 and 10 mM sprayed til runoff) and to roots of tomato
EXPERIMENTAL CONDITIONS: Barley seeds germination on treated filter paper monitored; emergence of pea seedlings from treated growth medium also monitored; effects of foliar and root application to tomato observed
EFFECTS: Barley--50% germination at 0.0015 mM; pea--50% emergence at 0.0075 mM; tomato--no phytotoxicity from foliage treatment at 5 and 10 mM
COMMENTS: Indication that treatment of cut tomato stems or to roots of tomato caused wilting, leaf necrosis and stem collapse from many of the treatments tested but specific treatments or compounds not mentioned
REFERENCE: Richardson, L.T. and G.D. Thorn, "Comparative Fungitoxicity and Phytotoxicity of Sodium N-Methyl-dithiocarbamate and its n-Alkyl Homologues," Can. J. Bot. 47:241-245(1969)

<1960>
CHEMICAL NAME: Carbamodithioic acid, N-heptyl-, sodium salt
PLANT: Barley (HORDEUM VULGARE); Pea, sweet (PISUM SATIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.0043, 0.035, 5.0, and 10.0 mM
APPLICATION METHODS: Filter paper barley seed germination, pea seedlings grown in medium containing test compound; treatment to tomato foliage (5 and 10 mM sprayed til runoff) and to roots of tomato
EXPERIMENTAL CONDITIONS: Barley seeds germination on treated filter paper monitored; emergence of pea seedlings from treated growth medium also monitored; effects of foliar and root application to tomato observed
EFFECTS: Barley--50% germination at 0.0043 mM; pea--50% emergence at 0.035 mM (value extrapolated); tomato--no phytotoxicity from foliage treatment at 5 and 10 mM
COMMENTS: Indication that treatment of cut tomato stems or to roots of tomato caused wilting, leaf necrosis and stem collapse from many of the treatments tested but specific treatments or compounds not mentioned
REFERENCE: Richardson, L.T. and G.D. Thorn, "Comparative Fungitoxicity and Phytotoxicity of Sodium N-Methyl-dithiocarbamate and its n-Alkyl Homologues," Can. J. Bot. 47:241-245(1969)

<1961>
CHEMICAL NAME: Carbamodithioic acid, N-hexyl-, sodium salt
PLANT: Barley (HORDEUM VULGARE); Pea, sweet (PISUM SATIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.0043, 0.013, 5.0, and 10.0 mM
APPLICATION METHODS: Filter paper barley seed germination, pea seedlings grown in medium containing test compound; treatment to tomato foliage (5 and 10 mM sprayed til runoff) and to roots of tomato
EXPERIMENTAL CONDITIONS: Barley seeds germination on treated filter paper monitored; emergence of pea seedlings from treated growth medium also monitored; effects of foliar and root application to tomato observed
EFFECTS: Barley--50% germination at 0.0043 mM; pea--50% emergence at 0.013 mM (value extrapolated); tomato--no phytotoxicity from foliage tratment at 5 and 10 mM
COMMENTS: Indication that treatment of cut tomato stems or to roots of tomato caused wilting, leaf necrosis and stem collapse from many of the treatments tested but specific treatments or compounds not mentioned
REFERENCE: Richardson, L.T. and G.D. Thorn, "Comparative Fungitoxicity and Phytotoxicity of Sodium N-Methyl-dithiocarbamate and its n-Alkyl Homologues," Can. J. Bot. 47:241-245(1969)

<1962>
CHEMICAL NAME: Carbamodithioic acid, N-nonyl-, sodium salt
PLANT: Barley (HORDEUM VULGARE); Pea, sweet (PISUM SATIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.0053, 0.0035, 5.0, and 10.0 mM
APPLICATION METHODS: Filter paper barley seed germination, pea seedlings grown in medium containing test compound; treatment to tomato foliage (5 and 10 mM sprayed til runoff) and to roots of tomato
EXPERIMENTAL CONDITIONS: Barley seeds germination on treated filter paper monitored; emergence of pea seedlings from treated growth medium also monitored; effects of foliar and root application to tomato observed
EFFECTS: Barley--50% germination at 0.0053 mM; pea--50% emergence at 0.0035 mM; tomato--no phytotoxicity from foliage spray at 5 and 10 mM
COMMENTS: Indication that treatment of cut tomato stems or to roots of tomato caused wilting, leaf necrosis and stem collapse from many of the treatments tested but specific treatments or compounds not mentioned
REFERENCE: Richardson, L.T. and G.D. Thorn, "Comparative Fungitoxicity and Phytotoxicity of Sodium N-Methyl-dithiocarbamate and its n-Alkyl Homologues," Can. J. Bot. 47:241-245(1969)

<1963>
CHEMICAL NAME: Carbamodithioic acid, N-octyl-, sodium salt
PLANT: Barley (HORDEUM VULGARE); Pea, sweet (PISUM SATIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.003, 0.0095, 5.0, and 10.0 mM
APPLICATION METHODS: Filter paper barley seed germination, pea seedlings grown in medium containing test compound; treatment to tomato foliage (5 and 10 mM sprayed til runoff) and to roots of tomato
EXPERIMENTAL CONDITIONS: Barley seeds germination on treated filter paper monitored; emergence of pea seedlings from treated growth medium also monitored; effects of foliar and root application to tomato observed
EFFECTS: Barley--50% germination at 0.003 mM; pea--50% emergence at 0.0095 mM; tomato--no phytotoxicity from foliage treatment at 5 and 10 mM
COMMENTS: Indication that treatment of cut tomato stems or to roots of tomato caused wilting, leaf necrosis and stem collapse from many of the treatments tested but specific treatments or compounds not mentioned
REFERENCE: Richardson, L.T. and G.D. Thorn, "Comparative Fungitoxicity and Phytotoxicity of Sodium N-Methyl-dithiocarbamate and its n-Alkyl Homologues," Can. J. Bot. 47:241-245(1969)

<1964>
CHEMICAL NAME: Carbamodithioic acid, N-pentyl-, sodium salt
PLANT: Barley (HORDEUM VULGARE); Pea, sweet (PISUM SATIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.0034, 0.060, 5.0, and 10.0 mM
APPLICATION METHODS: Filter paper barley seed germination, pea seedlings grown in medium containing test compound; treatment to tomato foliage (5 and 10 mM sprayed til runoff) and to roots of tomato
EXPERIMENTAL CONDITIONS: Barley seeds germination on treated filter paper monitored; emergence of pea seedlings from treated growth medium also monitored; effects of foliar and root application to tomato observed
EFFECTS: Barley--50% germination at 0.0034 mM; pea--50% emergence at 0.060 mM (value extrapolated); tomato--no phytotoxicity from foliage sprays at 5 and 10 mM
COMMENTS: Indication that treatment of cut tomato stems or to roots of tomato caused wilting, leaf necrosis and stem collapse from many of the treatments tested but specific treatments or compounds not mentioned
REFERENCE: Richardson, L.T. and G.D. Thorn, "Comparative Fungitoxicity and Phytotoxicity of Sodium N-Methyl-dithiocarbamate and its n-Alkyl Homologues," Can. J. Bot. 47:241-245(1969)

<1965>
CHEMICAL NAME: Carbamodithioic acid, N-propyl-, sodium salt
PLANT: Barley (HORDEUM VULGARE); Pea, sweet (PISUM SATIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.0021, 0.0085, 5.0, and 10.0 mM
APPLICATION METHODS: Filter paper barley seed germination, pea seedlings grown in medium containing test compound; treatment to tomato foliage (5 and 10 mM sprayed til runoff) and to roots of tomato
EXPERIMENTAL CONDITIONS: Barley seeds germination on treated filter paper monitored; emergence of pea seedlings from treated growth medium also monitored; effects of foliar and root application to tomato observed
EFFECTS: Barley--50% germination at 0.0021 mM; pea--50% emergence at 0.0085 mM; tomato--no phytotoxicity from foliage treatment at 5 and 10 mM
COMMENTS: Indication that treatment of cut tomato stems or to roots of tomato caused wilting, leaf necrosis and stem collapse from many of the treatments tested but specific treatments or compounds not mentioned
REFERENCE: Richardson, L.T. and G.D. Thorn, "Comparative Fungitoxicity and Phytotoxicity of Sodium N-Methyl-dithiocarbamate and its n-Alkyl Homologues," Can. J. Bot. 47:241-245(1969)

<1966>
CHEMICAL NAME: Carbamodithioic acid, N,N-diethyl-, sodium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Pea, sweet (PISUM SATIVUM); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.00006, 0.00012, 0.00025, 0.0005, 0.0008, 0.001, 0.0013, and 0.002 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; observations every 24 hours
EFFECTS: Growth reductions, especially root; higher concentrations more toxic; growth at 0.00006 M better than control of all but cotton
COMMENTS: Results recorded photographically; toxicity declined with decreasing concentration
REFERENCE: El-Nawawy, A.S. and M.A.S. Khalifa, "Relation Between Chemical Structure and Biological Activity Part 22. Phytocidal Properties of Sodium and Several s-Alkyl Isothiouronium Salts of N:N-diethyldithiocarbamic Acid to Four Different Crops," Alexandria J. Agric. Res. 14(1):275-280 (1966).

<1967>
CHEMICAL NAME: Carbamodithioic acid, N:N-diethyl-, s-ethylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Pea, sweet (PISUM SATIVUM); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.00006, 0.00012, 0.00025, 0.0005, 0.0008, 0.001, 0.0013, and 0.002 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; observations every 24 hours
EFFECTS: Growth reductions, especially root; higher concentrations more toxic; growth at 0.00006 M better than control of all but cotton
COMMENTS: Results recorded photographically; toxicity declined with decreasing concentration
REFERENCE: El-Nawawy, A.S. and M.A.S. Khalifa, "Relation Between Chemical Structure and Biological Activity Part 22. Phytocidal Properties of Sodium and Several s-Alkyl Isothiouronium Salts of N:N-diethyldithiocarbamic Acid to Four Different Crops," Alexandria J. Agric. Res. 14(1):275-280 (1966).

<1968>
CHEMICAL NAME: Carbamodithioic acid, N:N-diethyl-, s-methylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Pea, sweet (PISUM SATIVUM); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.00006, 0.00012, 0.00025, 0.0005, 0.0008, 0.001, 0.0013, and 0.002 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; observations every 24 hours
EFFECTS: Growth reductions, especially root; higher concentrations more toxic; growth at 0.00006 M better than control of but cotton
COMMENTS: Results recorded photographically; toxicity declined with decreasing concentration
REFERENCE: El-Nawawy, A.S. and M.A.S. Khalifa, "Relation Between Chemical Structure and Biological Activity Part 22. Phytocidal Properties of Sodium and Several s-Alkyl Isothiouronium Salts of N:N-diethyldithiocarbamic Acid to Four Different Crops," Alexandria J. Agric. Res. 14(1):275-280 (1966).

<1969>
<1969>
CHEMICAL NAME: Carbamodithioic acid, N:N-diethyl-, 1-s-n-amylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Pea, sweet (PISUM SATIVUM); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.00006, 0.00012, 0.00025, 0.0005, 0.0008, 0.001, 0.0013, and 0.002 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; observations every 24 hours
EFFECTS: Growth reductions, especially root; higher concentrations more toxic; growth at 0.00006 M better than control of all but cotton
COMMENTS: Results recorded photographically; toxicity declined with decreasing concentration
REFERENCE: El-Nawawy, A.S. and M.A.S. Khalifa, "Relation Between Chemical Structure and Biological Activity Part 22. Phytocidal Properties of Sodium and Several s-Alkyl Isothiouronium Salts of N:N-diethyldithiocarbamic Acid to Four Different Crops," Alexandria J. Agric. Res. 14(1):275-280 (1966).

<1970>
CHEMICAL NAME: Carbamodithioic acid, N:N-diethyl-, 1-s-n-butylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Pea, sweet (PISUM SATIVUM); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.00006, 0.00012, 0.00025, 0.0005, 0.0008, 0.001, 0.0013, and 0.002 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; observations every 24 hours
EFFECTS: Growth reductions, especially root; higher concentrations more toxic; growth at 0.00006 M better than control of all but cotton
COMMENTS: Results recorded photographically; toxicity declined with decreasing concentration
REFERENCE: El-Nawawy, A.S. and M.A.S. Khalifa, "Relation Between Chemical Structure and Biological Activity Part 22. Phytocidal Properties of Sodium and Several s-Alkyl Isothiouronium Salts of N:N-diethyldithiocarbamic Acid to Four Different Crops," Alexandria J. Agric. Res. 14(1):275-280 (1966).

<1971>
CHEMICAL NAME: Carbamodithioic acid, N:N-diethyl-, 1-s-n-heptylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Pea, sweet (PISUM SATIVUM); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.00006, 0.00012, 0.00025, 0.0005, 0.0008, 0.001, 0.0013, and 0.002 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; observations every 24 hours
EFFECTS: Growth reductions, especially root; higher concentrations more toxic; growth at 0.00006 M better than control of all but cotton
COMMENTS: Results recorded photographically; toxicity declined with decreasing concentration
REFERENCE: El-Nawawy, A.S. and M.A.S. Khalifa, "Relation Between Chemical Structure and Biological Activity Part 22. Phytocidal Properties of Sodium and Several s-Alkyl Isothiouronium Salts of N:N-diethyldithiocarbamic Acid to Four Different Crops," Alexandria J. Agric. Res. 14(1):275-280 (1966).

<1972>
CHEMICAL NAME: Carbamodithioic acid, N:N-diethyl-, 1-s-n-hexylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Pea, sweet (PISUM SATIVUM); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.00006, 0.00012, 0.00025, 0.0005, 0.0008, 0.001, 0.0013, and 0.002 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; observations every 24 hours
EFFECTS: Growth reductions, especially root; higher concentrations more toxic; growth at 0.00006 M better than control of all but cotton
COMMENTS: Results recorded photographically; toxicity declined with decreasing concentration
REFERENCE: El-Nawawy, A.S. and M.A.S. Khalifa, "Relation Between Chemical Structure and Biological Activity Part 22. Phytocidal Properties of Sodium and Several s-Alkyl Isothiouronium Salts of N:N-diethyldithiocarbamic Acid to Four Different Crops," Alexandria J. Agric. Res. 14(1):275-280 (1966).

<1973>
CHEMICAL NAME: Carbamodithioic acid, N:N-diethyl-, 1-s-n-propylisothiouronium salt
PLANT: Cotton (GOSSYPIUM BARBADENSE); Pea, sweet (PISUM SATIVUM); Wheat (TRITICUM PYRAMIDALE); Squash, winter (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 0.00006, 0.00012, 0.00025, 0.0005, 0.0008, 0.001, 0.0013, and 0.002 M
APPLICATION METHODS: Test compound incorporated into agar
EXPERIMENTAL CONDITIONS: Seeds germinated then transplanted to test tubes containing agar and test compound; observations every 24 hours
EFFECTS: Growth reductions, especially root; higher concentrations more toxic; growth at 0.00006 M better than control of all but cotton
REFERENCE: El-Nawawy, A.S. and M.A.S. Khalifa, "Relation Between Chemical Structure and Biological Activity Part 22. Phytocidal Properties of Sodium and Several s-Alkyl Isothiouronium Salts of N:N-diethyldithiocarbamic Acid to Four Different Crops," Alexandria J. Agric. Res. 14(1):275-280 (1966).

<1974>
CHEMICAL NAME: Carbamothioic acid, (cyclopropylmethyl)propyl-, S-ethyl ester
CHEMICAL COMMON NAME: CGA 17492
PLANT: Corn (ZEA MAYS); Cucumber (CUCUMIS SATIVUS); Bean, bush (PHASEOLUS HUMILIS); Tomato (LYCOPERSICON ESCULENTUM); Timothy (PHLEUM PRATENSE)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Preplanting incorporated treatments
EXPERIMENTAL CONDITIONS: Pot studies; vigor and growth injury determined 12 days after seeding and 17 days after emergence
EFFECTS: No significant effect on germination of any crop; 12 days after seeding--significant reduction in height of cucumber and watermelon at both rates; 17 days after emergence--vigor reduction in cucumber, watermelon and tomatoes at both rates, growth reduction at both rates in cucumber and watermelon and at 4 lb/A in tomatoes
REFERENCE: Locascio, S.J. and W.L. Currey, "Yellow Nutsedge (CYPERUS ESCULENTUS) control and Vegetable Crop Tolerance with Various Herbicides," Proc. South. Weed Sci. Soc. 26:259-266 (1973).

<1975>
CHEMICAL NAME: Carbamothioic acid, (cyclopropylmethyl)propyl-, S-ethyl ester
CHEMICAL COMMON NAME: CGA 17492
PLANT: Potato (SOLANUM TUBEROSUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: 6.7% postemergence application spray applied at 20 psi pressure and 38 gal/A volume
EXPERIMENTAL CONDITIONS: April planting; plots--2 rows wide by 30 ft long; randomized complete block design; treatments replicated five times in experiments 1 and 3 and four times in others; total of 5 experiments; rye seeded following potato harvest
EFFECTS: No effect on potato or rye crop; weed control rating of 7, barely commercially acceptable
COMMENTS: Author notes that growing conditions (cool spring and high June rainfall) caused vigorous weed growth and retarded potato growth, thus reason for commercially unacceptable weed control; herbicide combinations also discussed
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-282 (1973).

<1976>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Diallate
PLANT: Ryegrass, wimmera (LOLIUM RIGIDUM); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.56 kg/ha
APPLICATION METHODS: Preplant and preemergence incorporated by harrowing; 112 to 280 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils-- Wimmera clay, Rutherglen loam, and Currawa loam; soil pH--6.9-7.0; time period-- 1962 to 1968
EFFECTS: Effective control of ryegrass with no adverse effect on wheat yield; preplant more effective
COMMENTS: Di-allate and tri-allate gave preemergence control of Wimmera ryegrass in wheat; at similar rates, di-allate generally gave greater reduction of ryegrass population than did tri-allate; a number of situations where reduction in ryegrass population not followed by significant yield increase
REFERENCE: Reeves, T.G. and C.L. Tuohey, "The Selective Chemical Control of Wimmera Rye Grass in Wheat With Di-Allate and Tri-Allate," Aust. J. Exp. Agric. Anim. Husb. 12(54):55-59 (1972).

<1977>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Diallate
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete or near-complete control of shoot behavior at 10(-5) and 10(-6)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1978>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Diallate
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.35, 0.70, and 1.40 kg/ha
APPLICATION METHODS: Seed coating
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture, 11 klux light intensity; 22 C for 16 hr photoperiod; 18 C for dark, soil-sandy loam; field study, soil-silt loam, handweeding; NA (1,8-naphthalic anhydride) used at 0.5 and 1.0% of seed weight as antidote by means of seed coating
EFFECTS: Moderate to severe injury to oats reversed by NA (1.0%)
COMMENTS: Coating seeds of oats with NA significantly reduced phytotoxicity of barban applied to foliage; protection obtained when barban applied at 0.4 kg/ha, highest rate recommended for control of wild oats
REFERENCE: Chang, F.Y., G.R. Stevenson, G.W. Anderson, and J.D. Bandeen, "Control of Wild Oats in Oats with Barban Plus Antidote," Weed Sci. 22(6):546-548 (1974).

<1979>
<1979>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester
CHEMICAL COMMON NAME: DATC
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 3.0 and 6.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate weed control with no adverse effect on castorbean yield at higher rate
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<1980>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester
CHEMICAL COMMON NAME: DATC
PLANT: Beet, sugar (BETA VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Broadleaf weeds; Millet, German (SETARIA ITALICA)
EXPERIMENTAL DOSE: 2.6 lb/A
APPLICATION METHODS: Preplanting spring treatments at 30 psi
EXPERIMENTAL CONDITIONS: 44 in. by 100 ft plot size, herbicides applied in 6 or 9 in. bands to 2 rows spaced 22 in. apart; beet seed planted immediately after treatment; weeds seeded prior to application of herbicides
EFFECTS: No undue injury to sugar beet stand or vigor; lambsquarters--86% control; pigweed--43% control; other broadleaves--63% control; millet--74% control
COMMENTS: Thiolcarbamates active over wide range of seasonal conditions
REFERENCE: Sullivan, E.F., R.L. Abrams, and R.R. Wood, "Weed Control in Sugar Beets by Combinations of Thiolcarbamate Herbicides," Weeds 11(4):258-260 (1963).

<1981>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester
CHEMICAL COMMON NAME: CP-23426
PLANT: Beet, sugar (BETA VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Broadleaf weeds; Millet, German (SETARIA ITALICA)
EXPERIMENTAL DOSE: 1.9 lb/A
APPLICATION METHODS: Preplanting spring treatments at 30 psi
EXPERIMENTAL CONDITIONS: 44 in. by 100 ft plot size, herbicides applied in 6 or 9 in. bands to 2 rows spaced 22 in. apart; beet seed planted immediately after treatment; weeds seeded prior to application of herbicides
EFFECTS: No undue injury to beet stand or vigor; lambsquarters--79% control; pigweed--59% control; other broadleaves--30% control; millet--32% control
COMMENTS: Thiolcarbamates active over wide range of seasonal conditions
REFERENCE: Sullivan, E.F., R.L. Abrams, and R.R. Wood, "Weed Control in Sugar Beets by Combinations of Thiolcarbamate Herbicides," Weeds 11(4):258-260 (1963).

<1982>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Di-allate
PLANT: Oat, wild (AVENA FATUA); Wheat (TRITICUM sp.)
EXPERIMENTAL DOSE: 1.0, 1.25, and 1.5 lb/A
APPLICATION METHODS: Preseeding and postseeding incorporation in 5 gpa water at 30 psi
EXPERIMENTAL CONDITIONS: 1962 test--disking, double harrowing and triple harrowing compared, 1.0 and 1.5 lb/A, 3 replications in split-plot design where main plots were methods of incorporation, subplots the rate of application and split-plots the times of application, no wild oat present; 1963 test--wild oat and wheat present, best application rate and best method of application determined, randomized block design with 6 replications, 1.0, 1.25, and 1.5 lb/A, postseeded treatments harrowed and preseeded treatments disked
EFFECTS: 1962 test--no difference in wheat yield by different incorporation methods, postseeded application gave better wheat yields than preseeded treatments; 1963 test--good wild oat control at all rates but best at 1.5 lb/A, wheat yields better than untreated control
COMMENTS: Considering yield and treatment cost, 1.0 lb/A optimum application rate; postseeded application (seeds planted 3 in. deep) better than preseeded treatment; di-allate may reduce risk of injury when used instead of tri-allate
REFERENCE: Molberg, E.S., H.A. Friesen, E.V. McCurdy, and R.D. Dryden, "Placement of Di-allate and Tri-allate for Control of Wild Oats in Wheat," Can. J. Plant Sci. 44:351-358 (1964).

<1983>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Diallate
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 4.36 to 3.25 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as

<1983> CONT.
root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<1984>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Triallate
PLANT: Oat, wild (AVENA LUDOVICIANA); Oat, wild (AVENA FATUA);
EXPERIMENTAL DOSE: 0.25 to 8.00 oz/A
APPLICATION METHODS: Preplant spray (triallate), soil incorporation (1 in. depth); postemergence spray (barban)
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Cecilvale; pot culture
EFFECTS: Effective control of five wild oat strains at 4 oz and 8 oz and moderate control at 0.5 to 2.0 oz rates with varied strain responses
COMMENTS: Two A. FATUA strains had higher tolerance to triallate than three A. LUDOVICIANA strains; reverse occurred with barban, where grey and brown A. LUDOVICIANA particularly were very resistant; despite kill in some strains with barban, final plant populations as result of tillering generally greater than original
REFERENCE: Watkins, F.B., "Effect of Triallate and Barban on Five Strains of Wild Oat (AVENA Species) from the Darling Downs, Queensland," Queensl. J. Agric. Anim. Sci. 27(1):33-41 (1970).

<1985>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Triallate
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.35, 0.70, and 1.40 kg/ha
APPLICATION METHODS: Seed coating
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture, 11 klux light intensity; 22 C for 16 hr photoperiod; 18 C for dark, soil-sandy loam; field study, soil-silt loam, handweeding; NA (1,8-naphthalic anhydride) used at 0.5 and 1.0% of seed weight as antidote by means of seed coating
EFFECTS: Moderate to severe injury to oats reversed by NA (1.0%)
COMMENTS: Coating seeds of oats with NA significantly reduced phytotoxicity of barban applied to foliage; protection obtained when barban applied at 0.4 kg/ha, highest rate recommended for control of wild oats
REFERENCE: Chang, F.Y., G.R. Stevenson, G.W. Anderson, and J.D. Bandeen, "Control of Wild Oats in Oats with Barban Plus Antidote," Weed Sci. 22(6):546-548 (1974).

<1986>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Triallate
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in sorghum, oat, and cucumber at 1 ppm, less than 50% inhibition in sorghum and cucumber but 50% or greater in oat at 10 ppm; shoot--less than 50% inhibition in sorghum but 50% or greater inhibition in oat of 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<1987>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Triallate
PLANT: Oat, wild (AVENA FATUA); Foxtail, green (SETARIA VIRIDIS); Rapeseed (BRASSICA CAMPESTRIS); Rapeseed (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 1.4 and 1.68 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments applied in 102 l./ha water
EXPERIMENTAL CONDITIONS: Field experiments; clay loam soil; spring planting; plots--6.25 X 1.83 m with 4 rows spaced 22.9 cm apart; randomized complete block design with 4 replicates; control--untreated check
EFFECTS: Poor control of foxtail but good wild oat control; complete crop tolerance but no significant yield increase over untreated check
COMMENTS: Rapeseed--oilseed crop; drought conditions and insects reduced 1974 yields--herbicide effects nullified
REFERENCE: Chow, P.N.P., "Dinitroaniline Herbicides for Grassy Weed Control in Rapeseed," Can. J. Plant Sci. 56:705-713 (1976).

<1988>

<1988>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Triallate
PLANT: Oat, wild (AVENA FATUA); Wheat (TRITICUM AESTIVUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 1.65 kg/ha
APPLICATION METHODS: Preemergence spray; 180 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and clay loam; nitrogen amendment at rates of 22.44, and 66 kg/ha; grass weeds seeded; broadleafs controlled with bromoxynil (0.6 kg/ha); time period--1971 to 1973;
EFFECTS: Reduced yield of wheat with considerably reduced yield of wild oats seed and no adverse effect on foxtail
COMMENTS: Good control of wild oats and green foxtail obtained with tank mixture of solution nitrogen containing trifluralin and triallate; tank mixtures of triallate with solution nitrogen controlled wild oats; trifluralin with solution nitrogen controlled wild oats and green foxtail; control of green foxtail and wild oats resulted in increased wheat yields, higher nitrogen content in wheat grain, and more efficient use of applied nitrogen fertilizer
REFERENCE: Moyer, J.R. and R.D. Dryden, "Effects of Combined Applications of Triallate or Trifluralin with Solution," Can. Plant Sci. 57:479-484 (1976).

<1989>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Triallate
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 1.68, 3.36, and 4.48 kg/ha; 46.3% EC and 10% G
APPLICATION METHODS: Soil application; spray - 542 l/ha at 2.46 kg/cm(2); granular applied uniformly hand
EXPERIMENTAL CONDITIONS: Environmental chamber; soil--mixed 2:1:1 Fargo clay, sand, and compost; pot culture with sealed plastic bag cover to retain vapor; photoperiod--16 hr; light intensity--19 Klux; temperature--10, 20, or 30 C; exposure time--2 4, or 6 da; evaluation time--14 da
EFFECTS: Moderate growth inhibition when exposure was 6 da or temperature was 20 or 30 C (4.48 kg/ha); liquid formulation more active than granular
COMMENTS: Vapor from liquid triallate formulation inhibited seedling growth more than vapor from granular formulation, and degree of inhibition least in Fargo clay, intermediate in Hecla sandy loam and greatest in washed sand
REFERENCE: Miller, S.D. and J.D. Nalewaja, "Phototoxicity of Triallate Vapors to Wild Oat," Weed Sco. 24(1):134-6 (1976).

<1990>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Triallate
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.25, 0.50, 1.00, and 1.50 ppmw; G
APPLICATION METHODS: Addition to soil with mixing
EXPERIMENTAL CONDITIONS: Environmental chamber; soils--Melfort, Scepter, and Oxbow; pot culture; temperatures--10, 16, and 20 C; evaluation time--up to 20 wk; soil surface covered (3mm) with Ottawa sand; photoperiod--16 hr; light intensity--21.5 Klux
EFFECTS: Reduced growth at 1.50 ppmw
COMMENTS: Plants affected by triallate showed discoloration and malformation; primary leaf darker green color and thickened in comparison to normal leaf; necrosis of the leaf tip often observed
REFERENCE: McKercher, R.B., R. Ashford, and R.F. Morgan, "Effects of Triallate on Wild Oat Grown in a Growth Chamber," Weed Sci. 23(4):283-285 (1975).

<1991>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Triallate
PLANT: Oat, wild (AVENA LUDOVICIANA); Foxtail, slender (ALOPECURUS MYOSUROIDES); Wheat (TRITICUM sp.)
EXPERIMENTAL DOSE: 1.70 kg/ha
APPLICATION METHODS: Postemergence as 10% granular formulation
EXPERIMENTAL CONDITIONS: Wild oat and foxtail seeded at 4 rates--0, 130, 260, and 390 seeds/m(2); wheat sown at rate of 500 seeds/m(2); split plot design with 4 replications, herbicides were subplots and the weed populations the plots
EFFECTS: Wild oat--mean dry weight of 50.3 g/ha compared to mean of 101.8 g/ha for the check; foxtail--mean dry weight of 23.9 g/ha compared to check mean of 21.7 g/ha; wheat--check grain yield was 20.6 g/ha and treatment yield was 29.2 g/ha
COMMENTS: Check was sown the same as treated plots; effectiveness against wild oat decreased as infestation increased
REFERENCE: Catizone, P., "Trials on Wild Oat (AVENA LUDOVICIANA, DURIEU) Control in Winter Wheat Comparing New Herbicides," Proc. Brit. Weed Control Conf. 12:45-52 (1974).

<1992>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Triallate
PLANT: Oat, wild (AVENA FATUA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A; EC and G
APPLICATION METHODS: Preemergence and postemergence sprays; 20 gal/A at 32 lb/sq in; and broadcast (G)
EXPERIMENTAL CONDITIONS: Field study; 13 sites in Britain; time period--1970-1972
EFFECTS: Moderate control of A. FATUA with no adverse effect on wheat; G formulation most effective
COMMENTS: Best control obtained from pre-emergence tri-allate granules and chlortoluron, and late post-emergence benzoylprop-ethyl; all treatments tended to perform less well at highest weed populations; good yield responses obtained
REFERENCE: Proctor, J.M. and D.B. Livingston, "Chemical Control of AVENA FATUA in Winter Wheat," Proc. 11th. Br. Weed Cont. Conf. 11(1):288-293 (1972).

<1993>
CHEMICAL NAME: Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
CHEMICAL COMMON NAME: Tri-allate
PLANT: Oat, wild (AVENA FATUA); Wheat (TRITICUM sp.)
EXPERIMENTAL DOSE: 1.0, 1.25, and 1.5 lb/A
APPLICATION METHODS: Preseeding and postseeding incorporation in 5 gpa water at 30 psi
EXPERIMENTAL CONDITIONS: 1962 test--disking, double harrowing and triple harrowing compared, 1.0 and 1.5 lb/A, 3 replications in split-plot design where main plots were methods of incorporation, subplots the rate of application and split-plots the times of application, no wild oat present; 1963 test--wild oat and wheat present, best application rate and best method of application determined, randomized block design with 6 replications, 1.0, 1.25, and 1.5 lb/A, postseeded treatments harrowed and preseeded treatments disked
EFFECTS: 1962 test--no difference in wheat yield by different incorporation methods, postseeded application gave better wheat yields than preseeded treatments; 1963 test--good wild oat control at all rates but best at 1.5 lb/A, wheat yields better than untreated control
COMMENTS: Considering yield and treatment cost, 1.0 lb/A optimum application rate; postseeded application (seeds planted 3 in. deep) better than preseeded treatment; di-allate may reduce risk of injury when used instead of tri-allate
REFERENCE: Molberg, E.S., H.A. Friesen, E.V. McCurdy, and R.D. Dryden, "Placement of Di-allate and Tri-allate for Control of Wild Oats in Wheat," Can. J. Plant Sci. 44:351-358 (1964).

<1994>
CHEMICAL NAME: Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
CHEMICAL COMMON NAME: Butylate
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam
EFFECTS: Effective control of grass weeds and moderate control of broadleaf weeds with no adverse effect on corn yield
COMMENTS: Butylate and EPTC+R-25788 preplant incorporated applications provided excellent grassy weed control; fall panicum and crabgrass control obtained by various combination treatments which included alachlor, procyazine, atrazine, penoxalin, bifenox, metolachlor, or Vel 5026
REFERENCE: Vengris, J., "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 31:1-5 (1977).

<1995>
CHEMICAL NAME: Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
CHEMICAL COMMON NAME: Butylate
PLANT: Nutsedge (CYPERUS sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Pigweed (AMARANTHUS sp.); Pigweed, spiny (AMARANTHUS SPINOSUS); Jimsonweed (DATURA STRAMONIUM); Purslane, common (PORTULACA OLERACEA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3.0 to 4.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 6% EC Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Moderate to effective weed control except sandbur (no control) with good corn tolerance
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<1996>
CHEMICAL NAME: Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
CHEMICAL COMMON NAME: Butylate
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, 10(-6), and 10(-7)
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-4)M; moderate control at 10(-5)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<1997>
CHEMICAL NAME: Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
CHEMICAL COMMON NAME: Butylate
PLANT: Johnson grass (SORGHUM HALEPENSE); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3, 4, 6 and 9 lb/A
APPLICATION METHODS: Preplanting incorporated treatments at 2 locations
EXPERIMENTAL CONDITIONS: Location 1, trial 1--Loring silt loam, trifluralin applied as check on seedling johnsongrass control, 13.5 X 25 ft plots, randomized complete block design with 3 replications, no corn planted; location 1, trial 2--2-year experiment, Loring silt loam, alachlor used as check on seedling johnsongrass control, 13.3 X 40 ft plots, corn planted; location 2--Armour silt loam, trifluralin applied as check on seedling johnsongrass control, 15 X 40 ft plots, randomized complete block design with 3 replications, corn planted
EFFECTS: Location 1, trial 1--3, 6, and 9 lb/A gave 60, 95 and 100% seedling and 0, 15, and 75% rhizome control respectively; location 1, trial 2--3 and 4 lb/A gave 47 and 65% johnsongrass control in 1971 and 3, 4, and 6 lb/A gave 60, 70, and 70% control in 1972 respectively, corn yield in 1971 and 1972 better than cultivated check; location 2--3, 6, and 9 lb/A gave 33, 75, and 88% control on July 15 and 50, 60

<1997>
<1997> CONT.
and 85% on Oct. 8 respectively
COMMENTS: Recommended rate, 3 lb/A; weed control increased with increased rate but corn yield decreased, slight depression in corn vigor; rhizomes more difficult to control than seedlings
REFERENCE: Jeffery, L.S., J.T. Connell, and T.H. Morgan, Jr., "Johnsongrass Control in Corn Using Commercially-Available Herbicides," Tenn. Farm Home Sci. Prog. Rep. 93:38-40 (1975).

<1998>
CHEMICAL NAME: Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
CHEMICAL COMMON NAME: Butylate
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.0 lb/A; EC
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: In preplant incorporation application, moderate control of weeds with no adverse effect on corn silage yield
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<1999>
CHEMICAL NAME: Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
CHEMICAL COMMON NAME: Butylate
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; unidentified antidote (Stauffer Chemical Co.) applied at 0.016 to 0.125 lb/A and evaluated; time period--1971 and 1972
EFFECTS: Very slight damage to corn
COMMENTS: Without the antidote, vernolate caused substantial injury to corn; injury ranged from 8% at 3 lb per acre in 1971 to 94% at the 8-lb rate in 1972; when antidote included in the spray mixture there was no injury to corn in 1971 and only slight damage in 1972
REFERENCE: Buchanan, G.A., R.D. McLaughlin, and G. Ward, "Herbicide Antidotes for Crop Protection," Highl. Agric. Res. 19(4):8 (1972).

<2000>
CHEMICAL NAME: Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
CHEMICAL COMMON NAME: Butylate
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Lamb's-quarters (CHENOPODIUM ALBUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preplanting application; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (15-10-10) and diazinon (4.0 lb/A) applied before disking; preplanting herbicides incorporated immediately after application by rototilling
EFFECTS: Moderate control of weeds with no damage to corn
COMMENTS: Combination treatments provided no consistent advantages
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<2001>
CHEMICAL NAME: Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
CHEMICAL COMMON NAME: Butylate
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS); Cupgrass, hairy (SETARIA FABERI); Foxtail, robust purple (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.84, 1.68, and 3.36 kg/ha
APPLICATION METHODS: Soil addition; preplant spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; soil--Plano silt loam; temperature--26 C
EFFECTS: Calculated 50% effective dose was 0.50-1.55 kg/ha with moderate correlation between herbicidal effect (dry wt loss) and seed weight
COMMENTS: All four herbicides provided acceptable control for barnyardgrass, giant foxtail, green foxtail, robust-purple foxtail, and yellow foxtail; susceptibility of grasses to cyanazine and alachlor correlated with seed size; alachlor more effective in controlling green foxtail and hairy cupgrass when applied to the soil surface before emergence than when incorporated into soil prior to sowing
REFERENCE: Harvey, R.G., "Susceptibility of Seven Annual Grasses to Herbicides," Weed Res. 14(1):51-55 (1974).

<2002>
CHEMICAL NAME: Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
CHEMICAL COMMON NAME: Bulylate
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 2.2 and 4.5 kg/ha
APPLICATION METHODS: Postemergence spray application with soil incorporation by rototilling; 335 l/ha
EXPERIMENTAL CONDITIONS: Field application; removal of surviving tubers to greenhouse; evaluation time--6 wk (count of tuber germination)

<2002> CONT.
EFFECTS: Moderately reduced tuber germination at both application rates
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<2003>
CHEMICAL NAME: Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
CHEMICAL COMMON NAME: R-1910
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate control of weeds and no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<2004>
CHEMICAL NAME: Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
CHEMICAL COMMON NAME: Butylate
PLANT: Corn (ZEA MAYS); Nutsedge, yellow (CYPERUS ESCULENTUS); Foxtail, giant (SETARIA FABERI); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplant incorporated (2-3 in.) spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Mattapex silt loam; time period--1974 and 1975
EFFECTS: Moderate to effective weed control with slight initial damage to corn but no adverse effect on yield
COMMENTS: Best control of weed species achieved with combination of materials; only RP-20630 and RP-15018, at high rates, caused corn injury and reduced yields
REFERENCE: Parochetti, J.V., G.W. Burt, and A.W. Bell, "Triazines, Acetanilides, and Several Other Herbicides for Weed Control in Corn," Proc. N.E. Weed Sci. Soc. 30:48-54 (1976).

<2005>
CHEMICAL NAME: Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
CHEMICAL COMMON NAME: R-1910
PLANT: Beet (BETA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Kochia (KOCHIA SCOPARIA); Broadleaf weeds; Foxtail (SETARIA sp.)
EXPERIMENTAL DOSE: 4 to 16 lb/A
APPLICATION METHODS: Preplanting incorporated spray at 40 psi and 14.3 gpa
EXPERIMENTAL CONDITIONS: Spring trials; sandy and clay loam soils; some weed seedings made; irrigation when necessary; broadleaf weeds dominant over grass weeds
EFFECTS: 19% beet stunting and 103% beet stand; 70, 77, 72, and 81% pigweed, kochia, broadleaves, and pigweed control, respectively
COMMENTS: Comparisons with control; broadleaves refers to broadleaves other than pigweed and kochia
REFERENCE: Sullivan, E.F., R.R. Wood, R.L. Abrams, and S.G. Walter, "Preplant Weed Control on Sugar Beets," Am. Soc. Sugar Beet Technol. 13(5):389-396 (1965).

<2006>
CHEMICAL NAME: Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester
CHEMICAL COMMON NAME: Butylate sulfoxide
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Beet, sugar (BETA VULGARIS); Bean, snap (PHASEOLUS VULGARIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Mustard, Chinese (BRASSICA JUNCEA); Dock, curly (RUMEX CRISPUS); Oat (AVENA SATIVA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Barley (HORDEUM VULGARE); Foxtail, giant (SETARIA FABERI); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, great (AMBROSIA TRIFIDA); Lamb's-quarters (CHENOPODIUM ALBUM); Jimsomweed (DATURA STRAMONIUM); Morningglory, tall (IPOMOEA PURPUREA); Medick, black (MEDICAGO LUPULINA); Groundcherry (PHYSALIS LOBATA)
EXPERIMENTAL DOSE: 0.5, 1.7, and 3.4 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments; broadleaf weeds at 0.5 kg/ha--A. RETROFLEXUS, B. JUNCEA, and R. CRISPUS; grasses at 0.5 kg/ha--A. SATIVA, D. SANGUINALIS, E. CRUSGALLI, H. VULGARE, and S. FABREII; broadleaf weeds at 1.7 kg/ha--A. THEOPHRASTI, A. RETROFLEXUS, A. TRIFIDA, B. JUNCEA, C. ALBUM, D. STRAMONIUM, I. PURPUREA, M. LUPULINA, P. LOBATA, and R. CRISPUS
EXPERIMENTAL CONDITIONS: Loamy sand soil; greenhouse tests; thiocarbamates and their sulfoxide derivatives tested
EFFECTS: 68 and 99% broadleaf weed injury; 0, 90, 20, and 100% injury to corn, sugarbeet; bean, and cotton, respectively at 3.4 kg/ha
COMMENTS: Grass and broadleaf weed control better than parent compound but more damage to cotton and sugarbeet than from parent; weeds tabulated as broadleaves and grasses
REFERENCE: Casida, J.E., E.C. Kimmel, M. Lay, H. Ohkawa, J.E. Rodebush, R.A. Gray, C.K. Tseng, and H. Tilles, "Thocarbamate Sulfoxide Herbicides," Pesticides 3:675-679 (1974).

<2007>
<2007>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: Pebulate
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Tomato (LYCOPERSICON ESCULENTUM); Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Stinkgrass (ERAGROSTIS CILIANENSIS)
EXPERIMENTAL DOSE: 3.0 and 4.0 lb/A
APPLICATION METHODS: Pre-planting spray; 34 gal/acre; rotitilling--3 in. deep; EC formulation
EXPERIMENTAL CONDITIONS: Field study; soil--Norfolk loamy sand; evaluation time--one and three months; seven types of application schedules employed selectively
EFFECTS: Effective control of weeds at both application rates after one month but only moderate control after 3 mos; tomato yield significantly reduced at both rates; combination application with napropamide resulted in effective weed control after 3 mos
COMMENTS: Of a number of herbicides and herbicide combinations evaluated, S-6044 (undisclosed chemistry) applied as preemergence herbicide appeared most promising (excellent weed control without tomato injury)
REFERENCE: Beste, C.E., "Weed Control in Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 28:265-269 (1974).

<2008>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: Pebulate
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed (AMARANTHUS sp.); Nightshade (SOLANUM sp.); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Nutsedge (CYPERUS sp.)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Sprinkler irrigation; furrow irrigation
EXPERIMENTAL CONDITIONS: Not Given
EFFECTS: Herbicide acceptably controlled all weeds tested
REFERENCE: Agamalian, H., B. Fischer, F. Ashton, A. Lange, E. Stilwell, R. Brendler, H. Kempen, V. Schweers, H. Collins, R. King, and L. Buschmann, "Weed Control Studies in Tomatoes, 1968-1970," Calif. Agric. 26(1): 10-11 (1972).

<2009>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: Pebulate
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Crabgrass, large (DIGITARIA SANGUINALIS); Wiregrass (ELEUSINE INDICA); Bermudagrass, common (CYNODON DACTYLON); Sedge, annual (CYPERUS COMPRESSUS); Signalgrass, broad-leaf (BRACHIARIA PLATYPHYLLA); Eclipta (ECLIPTA ALBA)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Formulation -- 10% G in fall 6% EC in spring; sprays applied with knapsack sprayer at 40 psi pressure; granules applied with shaker can; preplanting application; incorporated in 12-inch band prior to laying mulch
EXPERIMENTAL CONDITIONS: Myakka fine sand; mulch -- 55 lb biodegradable kraft paper with surfaces coated with thin layer of polyethylene; fall and spring growing seasons; full bed mulch system; irrigation supplied by a seep ditch system -- each 7 row unit separated by a water ditch
EFFECTS: Weed control better than 90%; no significant differences in fruit size or yield as a result of herbicide
COMMENTS: Fall growing season -- ideal weather, well distributed rainfall; spring growing season -- abnormally dry and hot; signalgrass and eclipta not encountered in fall
REFERENCE: Burgis, D.S., "Herbicides for the Full Bed Mulch Tomato Culture System - II: In-the-Row," Proc. South. Weed Sci. Soc. 26:201-204 (1973).

<2010>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: Pebulate
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 6% EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate control of all weeds with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<2011>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: Pebulate
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3) M, 10(-4) M, 10(-5) M, 10(-6), and 10(-7)
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-4) M; moderate control at 10(-5) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1): 57-63 (1974).

<2012>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: PEBC
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 9.0 and 12.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: Effective weed control with damage of cotton
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<2013>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: PEBC
PLANT: Beet, sugar (BETA VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Broadleaf weeds; Millet, German (SETARIA ITALICA)
EXPERIMENTAL DOSE: 3.7 and 5.6 lb/A
APPLICATION METHODS: Preplanting incorporated spray at 30 psi; spring (3.7 lb/A) and summer (5.6 lb/A) applications (different plots)
EXPERIMENTAL CONDITIONS: 44 in. by 100 ft plot size, herbicides applied in 6 or 9 in. bands to 2 rows spaced 22 in. apart; beet seed planted immediately after treatment; weeds seeded prior to application of herbicides
EFFECTS: No undue injury to sugar beet stand or vigor; lambsquarters--64% control in spring, 100% in summer; pigweed--88 and 89% control with spring and summer treatments, respectively; other broadleaf weeds--81 and 100% control with spring and summer treatments, respectively; millet--65 and 82% control in spring and summer, respectively
COMMENTS: Thiolcarbamates active over wide range of seasonal conditions
REFERENCE: Sullivan, E.F., R.L. Abrams, and R.R. Wood, "Weed Control in Sugar Beets by Combinations of Thiolcarbamate Herbicides," Weeds 11(4):258-260 (1963).

<2014>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: PEBC
PLANT: Bean, cluster (CYAMOPRIS TETRAGONOLOBA); Pigweed (AMARANTHUS HYBRIDUS); Groundcherry (PHYSALIS MINIMA); (FLAVERIA CONTRAYERBA); Dayflower (COMMELINA BENGHALENSIS); Purslane, sea- (TRIANTHEMA PORTULACASTRUM); (DIGERA ARVENSIS); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 2.5, 4.5, and 6.5 kg/ha
APPLICATION METHODS: Preplanting treatment
EXPERIMENTAL CONDITIONS: Field trials; randomized block design with 75 plots; net plot size 5 x 4 m; 3 replications; effects on weeds and bean recorded
EFFECTS: T. PORTULACASTRUM--poor control; D. ARVENSIS--moderate control til harvest; C. DACTYLON--poor control; broadleaves--poor to moderate control, 2.5 kg/ha gave highest control; bean--slight yield increase
COMMENTS: C. BENGHALENSIS, P. MINIMA, F. CONTRAYERBA, L. ASPERA, and C. MURALE grouped as broadleaves and tabulated together
REFERENCE: Singh, R.M. and S.C. Sharma, "Efficacy of Pre-sowing Application of Herbicides on Crop Weed Competition in Cluster Bean," Labdev J. Sci. Technol. 5(4):302-310 (1967).

<2015>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: PEBC
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants; Pepper, pimento
EXPERIMENTAL DOSE: 4.0 lb/A
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Effective weed control with no adverse effect on tomato and pimento
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<2016>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: Pebulate
PLANT: Pepper, hot (CAPSICUM ANNUUM); Santa Maria (PARTHENIUM HYSTEROPHORUS); Nutsedge, purple (CYPERUS ROTUNDUS); (CLEOME CILIATA); (BOERHAVIA DIFFUSA); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); Pinkroot (SPIGELIA ANTHELMIA); Junglerice (ECHINOCHLOA COLONUM); Wiregrass (ELEUSINE INDICA); Sandbur (CENCHRUS ECHINATUS)
EXPERIMENTAL DOSE: 3 kg/ha
APPLICATION METHODS: Preplanting incorporated treatment
EXPERIMENTAL CONDITIONS: Seed bed trial; application 3 days before sowing
EFFECTS: Good control of most weeds; seedling emergence and early hot pepper growth damaged
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<2017>
<2017>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: Pebulate
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Pretransplant application to soil; rototilling to 3-4 in. depth; broadcast spray; 43 gal/A
EXPERIMENTAL CONDITIONS: Field study; normal cultivation
EFFECTS: Moderate weed control; slight loss in vigor of tobacco plants but insignificant effect on yield
COMMENTS: Pebulate not one of more effective herbicides
REFERENCE: Chapman, W.H., "Weed Control and Crop Tolerance with Various Herbicides Applied to Florida Shade Tobacco", Proc. S. Weed Sci. Soc. 26:170-172 (1973).

<2018>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: Pebulate
PLANT: Watergrass; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0, 4.0, 8.0, and 16.0 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) spray
EXPERIMENTAL CONDITIONS: Field study; two CA locations; soils--Burns silty clay loam and Egbert muck; time period--1960 and 1961
EFFECTS: Moderate control of watergrass at 16.0 lb/A with slight damage to corn but no adverse effect on corn yield
COMMENTS: Chemicals incorporated in soil as preemergence treatments gave satisfactory control of watergrass and many broadleaved weeds in corn growing in organic soils of Sacramento-San Joaquin Delta; eptam, tillam, atrazine and Randox-T all potentially useful chemicals
REFERENCE: Foy, C.L., T. Lyons, and S.P. Carlson, "Controlling Watergrass in Corn," Calif. Agric. 16(3):12-14 (1962).

<2019>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: PEBC
PLANT: Beet (BETA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Kochia (KOCHIA SCOPARIA); Broadleaf weeds; Foxtail (SETARIA sp.)
EXPERIMENTAL DOSE: 4 to 16 lb/A
APPLICATION METHODS: Preplanting incorporated spray at 40 psi and 14.3 gpa
EXPERIMENTAL CONDITIONS: Spring and summer tests; sandy and clay loam soils; some weed seedlings made; irrigation when necessary; broadleaf weeds dominant over grass weeds
EFFECTS: Spring--12% beet stunting and 97% beet stand, 60, 29, 57, and 71% pigweed, kochia, broadleaves, and foxtail control, respectively; summer--10% beet stunting and 114% beet stand; 79% pigweed and 86% foxtail control
COMMENTS: Comparisons with control; broadleaves refers to broadleaves other than pigweed and kochia; summer treatments more effective
REFERENCE: Sullivan, E.F., R.R. Wood, R.L. Abrams, and S.G. Walter, "Preplant Weed Control on Sugar Beets," Am. Soc. Sugar Beet Technol. 13(5):389-396 (1965).

<2020>
CHEMICAL NAME: Carbamothioic acid, butylethyl-, S-propyl ester
CHEMICAL COMMON NAME: Pebulate
PLANT: Broadleaf weeds; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 6.72 kg/ha
APPLICATION METHODS: Pre-plant incorporated, preemergence, or postemergence sprays; 280 l./ha at 2 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1972 and 1973
EFFECTS: Effective weed control with no adverse effect on beet
COMMENTS: Broadleaf weed control achieved in table beets with cycloate, CNP, pebulate, lenacil, pyrazon, IMC 3950, TCA + pyrazon, and pebulate followed by pyrazone; fair weed control achieved with EPTC, propachlor, and solubor; poor weed control obtained from CDEC, chlorpropham, pyrazon, and TCA; yields expressed as $/ha or tons/ha reduced by chlorpropham, lenacil, CNP, and TCA
REFERENCE: Phatak, S.C. and D.J. Cantliffe, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Table Beets," Hortsci. 10(3):271-273 (1975).

<2021>
CHEMICAL NAME: Carbamothioic acid, cyclohexylethyl-, S-ethyl ester
CHEMICAL COMMON NAME: Cycloate
PLANT: Purslane, common (PORTULACA OLERACEA); Lamb's-quarters (CHENOPODIUM ALBUM); Horseweed (ERIGERON CANADENSIS); Carnation; Dwarf mallow (MALVA ROTUNDIFOLIA); Bluegrass, annual (POA ANNUA); Buttercup, Bermuda (OXALIS CERNUA); Pigweed, prostrate (AMARANTHUS BLITOIDES)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: Spray application to ground bed; incorporation to about one-half in. depth by raking
EXPERIMENTAL CONDITIONS: Field study; soil--Sorrento fine sandy loam with one in cedar shavings mixed to 4-6 in. depth by rototilling; plants set seven days after herbicide application; evaluation--3, 8, and 12 wks (weed counts and crop phytotoxicity) and 6, 7, and 8 mos (crop yield)
EFFECTS: Effective control of some weed species at both application rates; moderate control of other weed species; little or no effect on carnation
COMMENTS: Four herbicides evaluated; propachlor appeared to be promising preemergence and preplant herbicide for control of wide variety of weeds in carnation culture; miscellaneous additional weeds also effectively controlled at herbicide rates cited above
REFERENCE: Bivins, J.L., C. Elmore, and A. Lange, "Chemical Weed Control in Carnation Transplants," Calif. Agric. 26(8):14-15 (1972).

<2022>
CHEMICAL NAME: Carbamothioic acid, cyclohexylethyl-, S-ethyl ester
CHEMICAL COMMON NAME: Cycloate
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS) ; Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Crabgrass, large (DIGITARIA SANGUINALIS); Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 3.36 and 4.48 kg/ha
APPLICATION METHODS: Preplant incorporated application with an Oxford Precision Sprayer at a rate of 280 l./ha with 2 kg/cm2 pressure
EXPERIMENTAL CONDITIONS: Sandy loam soil; spinach plants 10 cm apart in rows 1m apart; plot -- 3 rows 3m long; 4 replications of each treatment; weeds per 930 sq cm were counted; plants harvested from center of each plot 37 days after emergence
EFFECTS: Excellent control of lamb's-quarters at low rate, redroot pigweed and shepherd's-purse at either rate; no effect or spinach yields; significant increase in nitrate of spinach petioles and blades; total nitrogen increased in spinach petioles
COMMENTS: Increase in plant nitrate can result from soil or lower nitrate reductase activity; authors think that decrease in some phase of nitrate reduction by herbicide action is responsible for nitrate accumulation
REFERENCE: Cantliffe, D.J. and S.C. Phatak, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Spinach," Hortscience 9(5):470-472 (1974).

<2023>
CHEMICAL NAME: Carbamothioic acid, cyclohexylethyl-, S-ethyl ester
CHEMICAL COMMON NAME: Cycloate
PLANT: Beet, sugar (BETA VULGARIS); Plants; Kochia (KOCHIA SCOPARIA)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Preplant incorporated (4 cm depth); 561 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--clay loam and sandy clay loam; mixtures of cycloate and R-11913 (preplant) followed by phenmedipham also tested
EFFECTS: Compared to unweeded controls, slight control of kochia with little or no overall weed control and no adverse effect on sugarbeet yield; mixture with R-11913 and sequantial applicaiton of phenmedipham much more effective
COMMENTS: When mixture of cycloate plus R 11913 applied to three soils before planting sugarbeets, average stand of kochia reduced by 89% as compared to 9% with standard rate of cycloate; competition of foxtail millet, redroot pigweed, and kochia nearly eliminated throughout growing season by combination of cycloate plus R 11913 applied preplanting and phenmedipham applied postemergence.
REFERENCE: Schweizer, E.E., "Control of Kochia in Sugarbeets with 3-Hydroxypropionanilide Isopropylcarbamate," Weed Sci. 21(2):110-114 (1973).

<2024>
CHEMICAL NAME: Carbamothioic acid, cyclohexylethyl-, S-ethyl ester
CHEMICAL COMMON NAME: Cycloate
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-5)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2025>
CHEMICAL NAME: Carbamothioic acid, cyclohexylethyl-, S-ethyl ester
CHEMICAL COMMON NAME: Cycloate
PLANT: Grasses; Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 3.0 and 4.5 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared the following April; single row plots, 3 by 26 ft; treatments randomized in each of 8 blocks; 15 ft of row from each plot harvested July 16; non-treated plot--43 plants harvested
EFFECTS: June 7--good lambsquarter control, 4.5 lb/A somewhat better than 3.0 lb/A; July 14--good grass control, fair lambsquarter control, good ragweed control; beet harvest--65 plants at 3.0 lb/A and 56 plants at 4.5 lb/A
COMMENTS: Cycloate in combination with other herbicides also reported
REFERENCE: Noll, C.J., "Weed Control in Beets with Herbicides," Proc. Northeast. Weed Sci. Soc. 31:244-246 (1977).

<2026>
CHEMICAL NAME: Carbamothioic acid, cyclohexylethyl-, S-ethyl ester
CHEMICAL COMMON NAME: Cycloate
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 2.0 to 8.0 ppm
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; soil-prepared with varying clay, silt, sand, lime, and organic content; plastic cup culture
EFFECTS: Reduced growth (fresh weight) of shoots
COMMENTS: Cycloate was most pctent herbicide of four, except in soils with high organic matter where delachlor was more active; benzthiazuron was least phytotoxic herbicide in the peat + sand mixtures, but

<2026>
<2026> CONT.
more active than pyrazon in lighter soils of the Newe Ya'ar series; addition of sand to peat and soils increased phytotoxicity of all herbicides; addition of lime to Newe Ya'ar clay soil decreased phytotoxicity of benzthiazuron and pyrazon but not of delachlor
REFERENCE: Horowitz, M. and T. Blumenfeld, "Phytotoxicity in Different Synthetic Soils," Phytoparasitica 1(2):101-110 (1973).

<2027>
CHEMICAL NAME: Carbamothioic acid, cyclohexylethyl-, S-ethyl ester
CHEMICAL COMMON NAME: Cycloate sulfoxide
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Mustard, Chinese (BRASSICA JUNCEA); Dock, curly (RUMEX CRISPUS); Oat (AVENA SATIVA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Barley (HORDEUM VULGARE); Foxtail, giant (SETARIA FABERI); Corn (ZEA MAYS); Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 0.5 and 3.4 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments; broadleaves at 0.5 kg/ha--A. RETROFLEXUS, B. JUNCEA, and R. CRISPUS; grasses at 0.5 kg/ha--A. SATIVA, D. SANGUINALIS, E. CRUSGALLI, H. VULGARE, and S. FABERI
EXPERIMENTAL CONDITIONS: Loamy sand soil; greenhouse tests; thiocarbamates and their sulfoxide derivatives tested
EFFECTS: 77% broadleaf weed injury; 89% grass injury; 0 corn and 80% sugarbeet injury at 3.4 kg/ha
COMMENTS: Grass and broadleaf weed control better than parent compound; corn injury less but sugarbeet injury greater than that from parent; weeds tabulated as broadleaves and grasses
REFERENCE: Casida, J.E., E.C. Kimmel, M. Lay, H. Ohkawa, J.E. Rodebush, R.A. Gray, C.K. Tseng, and H. Tilles, "Thocarbamate Sulfoxide Herbicides," Pesticides 3:675-679 (1974).

<2028>
CHEMICAL NAME: Carbamothioic acid, cyclohexylethyl-, S-ethyl ester
CHEMICAL COMMON NAME: Cycloate
PLANT: Broadleaf weeds; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 4.48 kg/ha
APPLICATION METHODS: Pre-plant incorporated, preemergence, or postemergence sprays; 280 l./ha at 2 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1972 and 1973
EFFECTS: Effective weed control with no adverse effect on beet
COMMENTS: Broadleaf weed control achieved in table beets with cycloate, CNP, pebulate, lenacil, pyrazon, IMC 3950, TCA + pyrazon, and pebulate followed by pyrazone; fair weed control achieved with EPTC, propachlor, and solubor; poor weed control obtained from CDEC, chlorpropham, pyrazon, and TCA; yields expressed as $/ha or tons/ha reduced by chlorpropham, lenacil, CNP, and TCA
REFERENCE: Phatak, S.C. and D.J. Cantliffe, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Table Beets," Hortsci. 10(3):271-273 (1975).

<2029>
CHEMICAL NAME: Carbamothioic acid, diethyl-, S-[(4-chlorophenyl)methyl] ester
CHEMICAL COMMON NAME: Benthiocarb
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Spangletop, bearded, (LEPTOCHLOA FASCICULARIS)
EXPERIMENTAL DOSE: 10,100, and 1000 ppmv
APPLICATION METHODS: Postemergence spary on seedlings to run-off; addition to soil surface
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Severe inhibition of barnyardgrass and sprangletop shoot growth with little apparent effect on root systems of either species
COMMENTS: Benthiocarb applied postemergence altered growth and development of shoots of barnyardgrass and bearded sprangletop seedlings; herbicide did not affect root development of either species
REFERENCE: Shibayama, H. and J.F. Worley, "Growth Responses of Barnyardgrass and Bearded Sprangletop Seedlings to Benthiocarb," Weed Sci. 24(3):276-281 (1976).

<2030>
CHEMICAL NAME: Carbamothioic acid, diethyl-, S-[(4-chlorophenyl)methyl] ester
CHEMICAL COMMON NAME: Benthiocarb
PLANT: Junglerice (ECHINOCHLOA COLONUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 2.0, 3.0, 4.0, and 4.5 kg/ha
APPLICATION METHODS: Knapsack sprayer application of 670 dm(3)/ha volume
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; 3 x 5 m plots; visual toxicity and weed control ratings
EFFECTS: Application 8 days after seeding at 2 and 4 kg/ha--C. ROTUNDUS and R. EXALTATA resistant, L. CHINENSIS and E. COLONUM susceptible; preemergence 2.0, 3.0, and 4.5 kg/ha--similar weed control, minor toxicity to rice
COMMENTS: Sufficient control of weeds to warrent further testing; effects on all weeds not specifically reported
REFERENCE: Aryeetey, A.N., "Chemical Weed Control in Rice in Ghana," Ghana J. Agric. Sci. 6:199-204 (1973).

<2031>
CHEMICAL NAME: Carbamothioic acid, diethyl-, S-[(4-chlorophenyl)methyl] ester
CHEMICAL COMMON NAME: IMC-3950
PLANT: Chamise (ADENOSTOMA FASCICULATUM); Junglerice (ECHINOCHLOA COLONUM); Spangletop, bearded (LEPTOCHLOA FASCICULARIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Crabgrass, large (DIGITARIA SANGUINALIS); Signalgrass, broad-leaf (BRACHIARIA PLATYPHYLLA); Nutsedge (CYPERUS sp.); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: Preemergence and postemergence; back pack air pressurized sprayer at 17 psi and 15 gpa; 8 lb/gal formulation
EXPERIMENTAL CONDITIONS: 4 Texas test locations; spring planting; sandy and clay loams; 10 by 90 ft area at

<2031> CONT.
each location treated, two 50 sq ft sample areas from the large area selected at random for weed control and yield data; rice either drill seeded or aerial dry seeded
EFFECTS: Preemergence--good control of all weeds except sedges at all but location 3, no sedge control at location 3, poor control of other species at location 3, no rice injury; postemergence--poor to moderate control of sedges and spreading dayflower, moderate to good control of junglerice and barnyardgrass, moderate control of other weeds, no rice injury
COMMENTS: Dry soil at location 3, chemicals were weather liable; only effective preemergence when followed by irrigation or when applied to wet surface
REFERENCE: Palmer, R.D., "Rice Weed Control in the Texas Western Belt," Proc. South. Weed Sci. Soc. 26:146-154 (1973).

<2032>
CHEMICAL NAME: Carbamothioic acid, diethyl-, S-[(4-chlorophenyl)methyl] ester
CHEMICAL COMMON NAME: Benthiocarb
PLANT: Plants; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 1.5 and 2.0 kg/ha; G and sprayable liquids
APPLICATION METHODS: Broadcast (G) and spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control and increased rice yield
COMMENTS: 2,4-D and MCPA equally effective in controlling barnyard grass and other annual weeds in transplanted rice; yields significantly increased in nearly all applications; for direct-seeded flooded rice, granular formulations of several new herbicides, such as butachlor, benthiocarb and C-288 highly selective in controlling barnyardgrass and other annual weeds under tropical conditions
REFERENCE: De Datta, S.K., "Chemical Weed Control in Tropical Rice in Asia," PANS 28(4):433-440 (1972).

<2033>
CHEMICAL NAME: Carbamothioic acid, diethyl-, S-[(4-chlorophenyl)methyl] ester
CHEMICAL COMMON NAME: Benthiocarb
PLANT: Pigweed (AMARANTHUS sp.); Purslane, common (PORTULACA OLERACEA); Santa Maria (PARTHENIUM HYSTEROPHORUS); (PHYLLANTHUS AMARUS); Wiregrass (ELEUSINE INDICA); Junglerice (ECHINOCHLOA COLONUM); Crabgrass (DIGITARIA INSULARIS); Nutsedge, purple (CYPERUS ROTUNDUS); Cabbage (BRASSICA OLERACEA); Carrot (DAUCUS CAROTA); Beet, sugar (BETA VULGARIS); Bean, snap (PHASEOLUS VULGARIS); Lettuce (LACTUCA SATIVA); Groundnut (PANAX TRIFOLIUM); Soybean (GLYCINE MAX); Onion (ALLIUM CEPA); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 2.0 and 4.0 kg/ha
APPLICATION METHODS: Preplanting treatment
EXPERIMENTAL CONDITIONS: Loam soil; non-field experiments
EFFECTS: All crops safe at 2.0 kg/ha, weed control moderate; crops in which safe at 4.0 kg/ha--cabbage, groundnut, snapbean, and rice; crops in which unsafe at 4.0 kg/ha--carrot, beet, lettuce, soybean and onion; good weed control at 4.0 kg/ha
COMMENTS: Promising herbicides from these studies tested in field
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<2034>
CHEMICAL NAME: Carbamothioic acid, diethyl-, S-ethyl ester, mixt. with 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine
CHEMICAL COMMON NAME: S-6176
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.75 lb/A; EC
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: In preplant incorporation application, moderate control of weeds with no adverse effect on corn silage yield
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<2035>
CHEMICAL NAME: Carbamothioic acid, diethyl-, S-ethyl ester, mixt. with 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine
CHEMICAL COMMON NAME: BAS-2903-H
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preemergence application; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (5-10-10) and diazinon (4.0 lb/A) applied before disking
EFFECTS: Moderate grass control with effective control of pigweed; no injury to corn
COMMENTS: Combination preemergence or postemergence treatments about as effective as herbicides alone
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<2036>
<2036>
CHEMICAL NAME: Carbamothioic acid, diethyl-, S-ethyl ester, mixt. with 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine
CHEMICAL COMMON NAME: S-6176
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Lamb's-quarters (CHENOPODIUM ALBUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.75 lb/A
APPLICATION METHODS: Preplanting application; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (15-10-10) and diazinon (4.0 lb/A) applied before disking; preplanting herbicides incorporated immediately after application by rototilling
EFFECTS: Moderate control of weeds with no damage to corn
COMMENTS: Combination treatments provided no consistent advantages
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<2037>
CHEMICAL NAME: Carbamothioic acid, diethyl-S-[4-methylphenyl)methyl] ester
CHEMICAL COMMON NAME: IMC-3950
PLANT: Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Cudweed, low (GNAPHALIUM ULIGONOSA); Broccoli (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Cabbage (BRASSICA OLERACEA); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 4.5 and 6.7 kg/ha
APPLICATION METHODS: Preplant spray soil incorporation by disking; preemergence spray
EXPERIMENTAL CONDITIONS: Field study; 5 year period
EFFECTS: Moderate weed control in one year only with no adverse effects on vegetables
COMMENTS: Trifluralin, DCPA, and nitrofen gave eratic weed control and must be applied at highest rates of application permitted by label for even average weed control in most years; two new herbicides pryanchlor and IMC 3950 show promise for use on cole crops in Eastern Canada
REFERENCE: Ivany, J.A. and J.A. Cutcliffe, "Herbicides for Cole Crops in Eastern Canada," Proc. Northeast. Weed Sci. Soc. 27:194-198 (1973).

<2038>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 1.5 and 3.0 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Moderate to effective control of weeds in preplanting applications; no effect on beans
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.E. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<2039>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Panicum, fall (PANICUM DICHOTOMIFLORUM); Grasses; Broadleaf weeds; Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth)
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam; time period--1975 and 1976
EFFECTS: Effective control of all weeds at both rates with no adverse effect on alfalfa yield
COMMENTS: Dinoseb, metolachlor, and methazole significantly thinned out alfalfa seedings; benefin, EPTC, profluralin, and butralin were outstanding treatments in grassy weed control; Vel 5052 did good job in controlling fall panicum and other grassy weeds but poor in broadleaf weed control
REFERENCE: Vengris, J. "Annual Weed Control in Alfalfa New Seedlings," Proc. Northeast. Weed Sci. Soc. 31:99-103 (1977).

<2040>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam
EFFECTS: Effective control of weeds with no adverse effect on corn yield
COMMENTS: Butylate and EPTC+R-25788 preplant incorporated applications provided excellent grassy weed control; fall panicum and crabgrass control obtained by various combination treatments which included alachlor, procyazine, atrazine, penoxalin, bifenox, metolachlor, or Vel 5026
REFERENCE: Vengris, J., "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 31:1-5 (1977).

<2041>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 50 gal at 30 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1969 to 1971
EFFECTS: Moderate to effective control of all weeds in preplant incorporated and postemergence applications with no significant adverse effect on potato yield
COMMENTS: All treatments rated good to excellent in broadleaf weed control; all chemical treatments equal or superior to cultivation in control of broadleaf weeds
REFERENCE: Swingle, H.D. and C. Mullins, "Herbicide Trials with Irish Potatoes," Proc. S. Weed Sci. Soc. 26:256-258 (1973).

<2042>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Plants; Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preplant incorporation (2 in. soil depth)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--aprox. 3 mos
EFFECTS: Effective control of weeds but reduced chrysanthemum yield at both rates
COMMENTS: Excellent weed control obtained with number of herbicides; only R-7465 and diphenamid used as soil surface treatments and bensulide gave unsatisfacotry control; various herbicide treatments found to affect growth of chrysanthemum plants to different degrees
REFERENCE: Welker, W.V. and J.C. Cialone, "An Evaluation of Herbicides for the Control of Weeds in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 26:51-54 (1972).

<2043>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.0 lb/A;
APPLICATION METHODS: Postemergence spray; EC Formulation
EXPERIMENTAL CONDITIONS: Greenhouse, field and environmental chamber; applications made at 6 hr intervals for a full day
EFFECTS: Reduced growth of seedling plants; early morning spray more effective than spray in evening
COMMENTS: Inhibition of growth of cotton seedlings varied diurnally; inhibition strongest when plants treated at about daybreak
REFERENCE: Gosselink, J.G. and L.C. Standifer, "Diurnal Rhythm of Sensitivity of Cotton Seedlings to Herbicides," Science 158:120-121 (1967).

<2044>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Nutsedge (CYPERUS sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Pigweed (AMARANTHUS sp.); Pigweed, spiny (AMARANTHUS SPINOSUS); Jimsonweed (DATURA STRAMONIUM); Purslane, common (PORTULACA OLERACEA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3.0 to 4.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 6% EC Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of broadleafs with generally moderate control of grasses except sandbur (no control) with slight phytotoxicity to corn
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<2045>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Broadleaf weeds; Grasses; Nutsedge, yellow (CYPERUS ESCULENTUS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 4.5 and 6.0 lb/A
APPLICATION METHODS: Preplant incorporated by drag-off; 38 gal/A at 20 psi; 6% EC Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of all weeds with no adverse effect on potato yield at 6.0 lb/A
COMMENTS: Incorporated type treatments effective in giving season-long annual grass control, but pre-emergence treatments were not; EPTC only effective material on heavy stand of nutsedge
REFERENCE: Sanok, W.J., "Evaluation of Herbicides for Control of Weeds in Long Island Potatoes-1973," Proc. Northeast. Weed Sci. Soc. 28:282-286 (1974).

<2046>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 4.0 and 6.0 lb/A
APPLICATION METHODS: Preplant incorporated; 38 gal/A at 20 psi; 7% EC Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective control of weeds with no adverse effect on potato yield

<2046>
<2046> CONT.
COMMENTS: Metribuzin alone or in combination with other materials very effective in controlling barnyard grass and lady's thumb; other chemicals also effective in maintaing commercially acceptable weed control throughout season
REFERENCE: Sanok, W.J. and L.E. Weber, "Evaluation of Potato Herbicides on Long Island 1974," Proc. Northeast. Weed Sci. Soc. 29:316-318 (1975).

<2047>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Hydrangea (HYDRANGEA sp.); Euonymous, sarcoxie (EUONYMUS RADICANS); Horseweed (ERIGERON CANADENSIS); Chickweed, common (STELLARIA MEDIA); Cinquefoil (POTENTILLA sp.); Crabgrass, large (DIGITARIA SANGUINALIS); Quackgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 5 lb/A
APPLICATION METHODS: Formulation -- 6lb/gal EC; Sprays applied with knapsack sprayer calibrated to deliver 50 gal/A; preplanting application
EXPERIMENTAL CONDITIONS: Sandy loam soil; 6x10 ft plots; hydrangea, sarcoxie euonymus, and chrysanthemum plants placed in each plot at 1, 7, and 14 days after herbicide treatment
EFFECTS: Fall - 5 lb/A gave complete control of large crabgrass, 5 lb/A gave fair control of quackgrass; spring - quackgrass control still fair but cinquefoils, horseweed and common chickweed invaded plot
COMMENTS: Author notes that woody ornamental plants provide little competition to herbaceous weeds for light, moisture and nutrients; short residual activity limits effectiveness; less injurious to evonymus, hydrangea and chrysanthemums than weed competition
REFERENCE: Ahrens, J.F., "Preplant Herbicides for Control of Quackgrass in Ornamentals," Proc. Northeast. Weed Sci. Soc. 28:372-378(1974).

<2048>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lily-turf (LIRIOPE sp.); Plants
EXPERIMENTAL DOSE: 5.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 6% EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate control of all weeds except purslane and barnyard grass (effective control) with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, EPTC, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<2049>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Grasses; Broadleaf weeds; Sicklepod (CASSIA OBTUSIFOLIA); Morningglory (IPOMOEA sp.); Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 2.24 and 3.36 kg/ha
APPLICATION METHODS: Preplant spray; 188 l./ha (incorporated, 5 cm depth) or 282 l./ha (injected, 5 cm depth)
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy loam or Cecil clay loam; time period--1969 to 1971
EFFECTS: At 3.36 kg/ha, effective control of grasses and moderate to effective control of broadleaf weeds with slight to moderate damage to sunflower; neither preplant method (incorporation or injection) was consistently more effective
COMMENTS: Alachlor applied in combination with either chlorpropham or prometryne satisfactorily controlled grasses and broadleaf weeds in sunflowers planted in April and June from 1969 through 1971; higher percentage of broadleaf weeds controlled with herbicides applied preemergence to sunflowers planted in April than when applied to sunflowers planted in June.
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Preplant or Preemergence on Weeds and Sunflowers," Crop Sci. 12(1):650-653 (1972).

<2050>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 5x10(-5) to 10(-4) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution in which intact corn plants were growing
EXPERIMENTAL CONDITIONS: Laboratory study; hydroponic culture of corn; R-25788 and EPTC added to solution in varied sequences; C(14) labelled EPTC used in some experiments
EFFECTS: Reduced growth of corn more than 50%; R-25788 blocked this effect especially when applied at same time
COMMENTS: R-25788 protected corn from injury by EPTC; R-25788 did not reduce EPTC uptake or alter EPTC distribution in plants; extracts from plants treated with EPTC plus R-25788 contained less unaltered EPTC than plants which received no R-25788; in R-25788 plus EPTC treated corn seedlings more CO(2) and EPTC vapors were released than from seedlings treated with EPTC alone
REFERENCE: Chang, F. Y., G. R. Stephenson, and J. D. Bandeen, "Effects of N,N-Diallyl-2,2-Dichloroacetamide on Ethyl N,N-Di-n-propylthiocarbamate Uptake and Metabolism by Corn Seedlings," J. Agric. Food Chem. 22(2):245-248 (1974).

<2051>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preplant incorporated (4 in depth) spray; 15 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of nutsedge
COMMENTS: Cyperquat and bentazon in postemergence application most effective herbicides, and CGA-24705 and U-44344 in preplant incorporated application most effective; perfluidone most effective preemergence application
REFERENCE: Kurtz, W.L. and E.W. Stroube, "Control of Yellow Nutsedge by Various Herbicides," Proc. N. Cent. Weed Contr. Conf. 30:59 (1975).

<2052>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, 10(-6), and 10(-7)
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete or near-complete control of shoot emergence at 10(-4) and 10(-5)M; poor control at 10(-6)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.P. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2053>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Potato (SOLANUM TUBEROSUM); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: EC formulation; treatments applied as spray at 30 psi and 40 gpa volume; preplant incorporated application
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications for each experiment; plot size--4 rows or 12 ft x 20 ft; Sassafras loam soil; center 2 rows harvested for yield determination
EFFECTS: 68% broadleaf and 80% grass control; no significant effect on potato yield
COMMENTS: Herbicidal effectiveness increased when R-7465 combined with EPTC and vernolate
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

<2054>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Sorghum (SORGHUM BICOLOR); Plants
EXPERIMENTAL DOSE: 5 l/ha
APPLICATION METHODS: Formulation--75.5% EPTC; preemergence application as spray in 1000 l. water
EXPERIMENTAL CONDITIONS: Rain-fed conditions, light black soil; 4 replications, randomized block design with plot size 610 cm x 458 cm
EFFECTS: No significant effect on sorghum germination; not highly efficient in controlling weeds; depressive effect on grain yields
COMMENTS: Simazine and atrazine more effective in weed control and grain yield than other herbicides tested; combination of simazine (1.25 kg/ha) preemergence plus 2,4-D (1 kg/ha) postemergence also gave good weed control and grain yield
REFERENCE: Krishnamurthy, K., "Effect of Herbicides on Weeds and Yield of Sorghum," Indian J. Agric. Sci. 40(5):474-480 (1970).

<2055>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in sorghum and cucumber but 50% or greater in oat at 1 and 10 ppm; shoot--50% or greater inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<2056>
<2056>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Johnson grass (SORGHUM HALEPENSE); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3, 4, 6 and 9 lb/A
APPLICATION METHODS: Preplanting incorporated treatments at 2 locations
EXPERIMENTAL CONDITIONS: Location 1, trial 1--Loring silt loam, trifluralin applied as check on seedling johnsongrass control, 13.5 X 25 ft plots, randomized complete block design with 3 replications, no corn planted; location 1, trial 2--2-year experiment, Loring silt loam, alachlor used as check on seedling johnsongrass control, 13.3 X 40 ft plots, corn planted; location 2--Armour silt loam, trifluralin applied as check on seedling johnsongrass control, 15 X 40 ft plots, randomized complete block design with 3 replications, corn planted
EFFECTS: Location 1, trial 1--3, 6 and 9 lb/A gave 60, 100, and 100% seedling and 0, 65, and 90% rhizome control respectively; Location 1, trial 2--3 and 4 lb/A gave 92 and 88% johnsongrass control in 1971 and 3, 4, and 6 lb/A gave 95, 98 and 99% control in 1972 respectively, corn yield best at 3 lb/A (better than weed free check); location 2--3, 6, and 9 lb/A gave 50, 67 and 82% control on July 15 and 48, 63, and 77% control on Oct. 8 respectively
COMMENTS: Recommended rate, 3 lb/A; weed control increased with increased rate but corn yield decreased, slight depression in corn vigor; rhizomes more difficult to control than seedlings
REFERENCE: Jeffery, L.S., J.T. Connell, and T.H. Morgan, Jr., "Johnsongrass Control in Corn Using Commercially-Available Herbicides," Tenn. Farm Home Sci. Prog. Rep. 93:38-40 (1975).

<2057>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Broadleaf weeds; Grasses; Bean, pinto (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplant spray (incorporated, 3.5 in. depth) and preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--Tripp sandy loam and Bridgeport loam; two locations in Nebraska
EFFECTS: Effective control of weeds with slight initial injury to field beans but no adverse effect on bean yield; preplant applicaiton more effective than preemergence
COMMENTS: Weed control and field bean yields higher when EPTC, trifluralin, and alachlor incorporated than when applied 4 days after planting and rotary hoed; best results with alachlor resulted when applied preemergence; best control of black nightshade was with EPTC and alachlor or these herbicides in combinations with other herbicides
REFERENCE: Fenster, C.R. and G.A. Wicks, "Weed Control in Field Beans in Nebraska," Proc. N. Centr. Weed Contr. Conf. 26:50-52 (1971).

<2058>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Incorporated spring treatment in 28 gpa solution
EXPERIMENTAL CONDITIONS: Spring application; 5 to 6 inch incorporation; plots--4 x 20 ft with 3 replications; monthly nutsedge counts; field studies
EFFECTS: Significant nutsedge control only at month 6 after application
REFERENCE: Locascio, S.J. and W.L. Currey, "Yellow Nutsedge (CYPERUS ESCULENTUS) control and Vegetable Crop Tolerance with Various Herbicides," Proc. South. Weed Sci. Soc. 26:259-266 (1973).

<2059>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 2.2, 3.4 and 4.5 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments to depth of 7.6 cm; spring treatments--2.2, 3.4 and 4.5 kg/ha; fall treatments--3.4 and 4.5 kg/ha
EXPERIMENTAL CONDITIONS: Four field tests--2 seeded in fall, 2 in spring; fall seedings in September, spring seedings in April; herbicide treatments were main plots, legumes were subplots; early injury and control ratings made 5 to 10 weeks after seeding, later observations made 3 to 4 weeks after initial recordings for spring planting and the following spring for fall plantings
EFFECTS: Alfalfa--low rate gave 8% early injury and 18% late injury, high rate gave 7% early injury and 21% late injury; clover--low rate gave 8% early injury and 26% late injury, high rate gave 30% early injury and 35% late injury; crownvetch--low rate gave 5% early injury and 23% late injury, high rate gave 12% early injury and 27% late injury; broadleaf weeds--low rate gave 89% early control and 81% late control, high rate gave 91% early control and 85% late control
COMMENTS: No apparent difference in legume injury from spring and fall treatments; results represent combined fall and spring observations
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<2060>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Clover, Egyptian (TRIFOLIUM ALEXANDRINUM); Plants
EXPERIMENTAL DOSE: 1.5 kg/ha
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; time period--1973 and 1974
EFFECTS: Moderate weed control with no adverse effect on berseem
COMMENTS: Stale seed-bed prepared by desiccation of weed seedlings with paraquat day before planting berseem

<2060> CONT.
and pre-planting incorporation of EPTC both effective in significantly reducing weed growth and boosting yields of berseem; berseem seeds coated with activated carbon before planting provided appreciated protection to corp against EPTC, but NA stunted berseem growth
REFERENCE: Gupta, O.P. and N.M. Bacchawat, "Weed Control in Berseem Using Stale Seed-Bed, EPTC, and MCPB," PANS 22(3):386-390 (1976).

<2061>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.0 lb/A; EC
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: In preplant incorporation application, moderate control of weeds with no adverse effect on corn silage yield
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<2062>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Plants; Potato (SOLANUM TUBEROSUM); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 4.5 lb/A; 6% E
APPLICATION METHODS: Postemergence, preemergence, and preplant incorporated sprays; 38 gal/A; 20 psi; granular materials applied with cone-type applicator; varied combined treatments evaluated
EXPERIMENTAL CONDITIONS: Field study; three locations; rye cover crop after harvest
EFFECTS: Moderate control of weeds with no adverse effect on crop plants
COMMENTS: Most treatments did not result in commercially acceptable control levels because of a number of conditions which reduced effectiveness of weed control in 1972
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<2063>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 3.0 lb/A; EC
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 40 gal/A; 730616 TeeJet spray tip at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Moderate control of weeds with no potato yield reduction in preplant incorporated applications
COMMENTS: Preplant incorporated herbicides R-7465, EPTC, and vernolate good single herbicides; increases in herbicidal effectiveness obtained when EPTC and vernolate combined with R-7465; alachlor alone excellent herbicide applied preemergence; increased weed control effectiveness resulted when this herbicide combined with linuron, chlorbromuron, metobromuron, methazole, or dinoseb
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

<2064>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Potato (SOLANUM TUBEROSUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 4.5 and 6 lb/A
APPLICATION METHODS: Formulation - 6% EC and 10% G; sprays applied at 20 psi pressure and 38 gal/A volume; granules applied with hand held, gravity flow, cone type applicator; preemergence incorporated treatments
EXPERIMENTAL CONDITIONS: April planting; plots--2 rows wide by 30 ft long; randomized complete block design; treatments replicated five times in experiments 1 and 3 and four times in others; total of 5 experiments; rye seeded following potato harvest
EFFECTS: Experiment 2--commercially unacceptable weed control, no effect on potato or rye crop; experiment 3--commercially unacceptable weed control, no effect on potato or rye crop; experiment 4--commercially unacceptable weed control, no effect on potato or rye crop; experiment 5--commercially unacceptable control of nutsedge, no effect on rye crop, 10% G gave comparatively good nutsedge control
COMMENTS: Author notes that growing conditions (cool spring and high June rainfall) caused vigorous weed growth and retarded potato growth, thus reason for commercially unacceptable weed control; herbicide combinations also discussed
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<2065>
<2065>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Yam (DIOSCOREA sp.); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed (AMARANTHUS DUBIUS); Painted-leaf (EUPHORBIA HETEROPHYLLA); Junglerice (ECHINOCHLOA COLONUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.12, 3.36, and 10.10 kg/ha
APPLICATION METHODS: Preemergence application delivered in 340 l./ha of water
EXPERIMENTAL CONDITIONS: Heavy clay soil; randomized complete block design with 4 to 8 replications; spring or summer planting
EFFECTS: Broadleaf weeds not controlled, effective annual grass control for 4 wk
COMMENTS: No treatment controlled weeds entire first growing season; flaming before crop emergence reduced density of all weeds except nutsedge
REFERENCE: Gaskins, M.H. and H. Delpin, "Weed Control in New Plantings of Steroid-Producing DIOSCOREA Species," Weed Sci. 21(3):263-265 (1973).

<2066>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3.0, 4.0, 6.0, and 8 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; unidentified antidote (Stauffer Chemical Co.) applied at 0.016 to 0.125 lb/A and evaluated; time period--1971 and 1972
EFFECTS: Moderate to severe damage to corn circumvented by use of antidote
COMMENTS: Without the antidote, vernolate caused substantial injury to corn; injury ranged from 8% at 3 lb per acre in 1971 to 94% at the 8-lb rate in 1972; when antidote included in the spray mixture there was no injury to corn in 1971 and only slight damage in 1972
REFERENCE: Buchanan, G.A., R.D. McLaughlin, and G. Ward, "Herbicide Antidotes for Crop Protection," Highl. Agric. Res. 19(4):8 (1972).

<2067>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 3.0 and 6.0 lb/A
APPLICATION METHODS: Preplant spray; 80 gal/A at 40 psi; soil incorporation (3 in. depth)
EXPERIMENTAL CONDITIONS: Field study; soil--gravelly silt loam
EFFECTS: Effective control of weeds with no adverse effect on potato yield
COMMENTS: EPTC and profluralin applied preplant incorporated provided full season control of annual barnyard grass in potatoes; either compound when combined with preemergence herbicides linuron, chlorbromuron, or DNBP provided full season control of BRASSICA NIGRA, BRASSICA CAMPESTRIS, POLYGONUM PERSICARIA, and CHENOPODIUM ALBUM
REFERENCE: Murphy, H.J., "Effect of Several Combinations of Preplant Incorporated and Preemergence Herbicides on Weed Control in Potatoes," Proc. Northeast. Weed Sci. Soc. 29:281-283 (1975).

<2068>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: Eptam
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Nightshade, black (SOLANUM NIGRUM); Foxtail, giant (SETARIA FABERI); Foxtail, green (SETARIA VIRIDIS); Nightshade, hairy (SOLANUM sp.); Kochia (KOCHIA SCOPARIA); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed (AMARANTHUS sp.); Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Soil incorporation (preplant) with disks or cultivators to depth of 1.5-3.0 in.
EXPERIMENTAL CONDITIONS: Field study; all major soil types in CA, CO, ID, MT, WA and WY
EFFECTS: Effective control of broadleaf weeds and grasses with no toxicity to dry beans
COMMENTS: COBEX showed definite potential as selective herbicide for dry and green beans when compared with several conventional herbicides
REFERENCE: Harris, G.K. and J.D. Stone, "COBEX - A New Herbicide for Beans," Proc. West. Soc. Weed Sci. 27:47 (1974).

<2069>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Lamb's-quarters (CHENOPODIUM ALBUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preplanting application; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (15-10-10) and diazinon (4.0 lb/A) applied before disking; preplanting herbicides incorporated immediately after application by rototilling
EFFECTS: Moderate control of weeds with no damage to corn
COMMENTS: Combination treatments provided no consistent advantages
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<2070>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Pea, sweet (PISUM SATIVUM); Amaranth (AMARANTHUS VIRIDIS); (DIGERA ARVENSIS); (BOERHAAVIA DIFFUSA); (BOERHAAVIA REPANDA); Dayflower (COMMELINA BENGHALENSIS); (PENNISETUM TYPHOIDES); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0, 10.0, and 100 ppm
APPLICATION METHODS: Postemergence spray to runoff
EXPERIMENTAL CONDITIONS: Greenhouse study (presumed); pot culture
EFFECTS: Slight to moderate damage to plants except B. DIFFUSA (severe damage)
COMMENTS: Triazine and urea herbicides caused appreciable stimulation of stomatal opening within two hours; amides caused rapid closure of open stomata; thiocarbamates caused differential response
REFERENCE: Rama Das, V.S. and M. Santakumari, "Stomatal Behaviour Towards Four Classes of Herbicides as a Basis of Selectivity to Certain Weeds and Crop Plants," Proc. Indian Acad. Sci. 82B(3):108-116 (1975).

<2071>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 6.0 and 12.0 lb/A
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: At 6.0 lb/A, effective control of broadleaf weeds and moderate control of grasses with moderate damage to cotton, slight damage to corn, and no damage to soybean
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, Simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but fairly safe on corn, MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(iso-propylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<2072>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 6.0 to 12.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: Effective weed control with damage of cotton
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<2073>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Bermudagrass, common (CYNODON DACTYLON); Bermudagrass (CYNODON sp.)
EXPERIMENTAL DOSE: 6.7, 10.1, and 13.4 kg/ha
APPLICATION METHODS: Broadcast; 2.3% G; one or two applications
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy clay loam and Madison sandy clay loam; second applications--6 to 7 wks after first; evaluation times--2 to 14 wks after treatment
EFFECTS: Effective control of weeds at 6.7 kg/ha with some damage to 5 varieties of Bermudagrass turf varieties but these recovered
COMMENTS: EPTC applied in two applications at 6 to 7-week intervals, controlled an average of 88% common bermudagrass and 99% large crabgrass
REFERENCE: Johnson, B.J., "Grass Control with EPTC in Sand Traps on Golf Courses," Weed Sci. 22(5)434-436 (1974).

<2074>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 2.2 and 4.5 kg/ha
APPLICATION METHODS: Postemergence spray application with soil incorporation by rototilling; 335 l/ha
EXPERIMENTAL CONDITIONS: Field application; removal of surviving tubers to greenhouse; evaluation time--6 wk (count of tuber germination)
EFFECTS: Moderately reduced tuber germination at higher application rate
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<2075>
<2075>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 3.0 and 6.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate weed control with no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<2076>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Corn (ZEA MAYS); Quackgrass (AGROPYRON REPENS); Plants
EXPERIMENTAL DOSE: 4.6 and 9.2 kg/ha; EC
APPLICATION METHODS: Preemergence spray (incorporated); 225 l./ha at 2.1 bars pressure
EXPERIMENTAL CONDITIONS: Field study, time period--1974 to 1976
EFFECTS: At 9.2 kg/ha with safener; effective control of weeds with no adverse effect on corn
COMMENTS: EPTC gave excellent control of AGROPYRON REPENS and annual weeds, but symptoms of damage to crop; addition of R-25788 safener gave maize complete protection from damage by EPTC; R-25788 safener allowed EPTC, to be applied without any crop damage; R-25788 did not effect degree or range of weed control
REFERENCE: Elliott, R.A. and T.J. Purnell, "Effect of the Addition of R-25788 Safener to EPTC for the Control of AGROPYRON REPENS and Annual Weeds in Forage Maize," Proc. 1976 Br. Crop Protection Conf. - Weeds 2:533-540 (1976).

<2077>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Poor sesame tolerance and good barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<2078>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 6 to 12 lb/A, oil adjuvent
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate kill with heavy regrowth (3 mo)
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<2079>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Onion (ALLIUM CEPA); Tomato (LYCOPERSICON ESCULENTUM); Pepper (CAPSICUM FRUTESCENS); Cucumber (CUCUMIS SATIVUS); Bean, hyacinth (DOLICHOS LAB LAB); Broccoli (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 4.0, 6.0, and 8.0 lb/A; G
APPLICATION METHODS: Preplant incorporated (2 in. depth) by rotary cultivator
EXPERIMENTAL CONDITIONS: Field study; 3 CA locations; furrow irrigation; soils--Moreno fine sandy loam and Ramona sandy loam
EFFECTS: At 4.0 lb/A, effective control of grasses and moderate control of broadleaf weeds with reduced crop emergence and vigor of all crops except broccoli (one location)
COMMENTS: Herbicides for vegetables in three desert areas managed under furrow irrigation exhibited extreme variability between locations in herbicide response and crop toxicity; no treatments provided reasonable compromise between weed control and crop injury at any one location; none met this requirement at each location
REFERENCE: Lyons, J.M. and F.L. Whiting, "Incorporated Preemergence Granular Herbicides on Vegetable Crops," Weeds 13(3):242-245 (1965).

<2080>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Weed control effectiveness not stated, but injury and yield reduction of tomato
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<2081>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Corn (ZEA MAYS); Nutsedge, yellow (CYPERUS ESCULENTUS); Foxtail, giant (SETARIA FABERI); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplant incorporated (2-3 in.) spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Mattapex silt loam; time period--1974 and 1975
EFFECTS: Moderate to effective weed control with slight initial damage to corn but no adverse effect on yield
COMMENTS: Best control of weed species achieved with combination of materials; only RP-20630 and RP-15018, at high rates, caused corn injury and reduced yields
REFERENCE: Parochetti, J.V., G.W. Burt, and A.W. Bell, "Triazines, Acetanilides, and Several Other Herbicides for Weed Control in Corn," Proc. N.E. Weed Sci. Soc. 30:48-54 (1976).

<2082>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 0.25 and 0.50 kg/ha
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: At 0.5 kg/ha, slightly reduced shoot weight
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<2083>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 3.0 and 6.0 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, or postemergence sprays; 80 gal/A at 40 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; soil--Caribon gravelly silt loam
EFFECTS: In preplant incorporated application, moderate control of weeds with no adverse effect on potatoes
COMMENTS: Oryzalin, oryzalin plus metribuzin, and RE 17111 did acceptable job of controlling mustard, lambsquarters, bindweed, ladysthumb, and chickweed; in one test, trifluralin, EPTC, EL-161, oryzalin, or metribuzin did not control quackgrass
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in Potatoes With Several Pre-Plant Incorporated, Preemergence, and Early Post Emergence Herbicides," Proc. N.E. Weed Sci. Soc. 30:235-238 (1976).

<2084>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Watergrass; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0, 4.0, 8.0, and 16.0 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) spray
EXPERIMENTAL CONDITIONS: Field study; two CA locations; soils--Burns silty clay loam and Egbert muck; time period--1960 and 1961
EFFECTS: At 16.0 lb rate, effective control of watergrass with slight damage to corn and no adverse effect on yield
COMMENTS: Chemicals incorporated in soil as preemergence treatments gave satisfactory control of watergrass and many broadleaved weeds in corn growing in organic soils of Sacramento-San Joaquin Delta; eptam, tillam, atrazine and Randox-T all potentially useful chemicals
REFERENCE: Foy, C.L., T. Lyons, and S.P. Carlson, "Controlling Watergrass in Corn," Calif. Agric. 16(3):12-14 (1962).

<2085>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Potato (SOLANUM TUBEROSUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 4.0 to 9.3 lb/A
APPLICATION METHODS: Preemergence, pre-plant incorporated, or postemergence sprays; 30 to 35 lb/sq in at 18 to 43 gal/A

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EXPERIMENTAL CONDITIONS: Field study; soil-Haven loam
EFFECTS: Preplant incorporated, 6.0 lb/A--moderate control of nutsedge and effective control of barnyardgrass with no adverse effect on potato
COMMENTS: Outstanding treatments were CGA 24705 applied preemergence or pre-soil incorporated, maintaining 80% control or better for at least three months; results excellent also with EPTC, alachlor, napropamide, and FMC 25213; several herbicides in combination also effective
REFERENCE: Selleck, G.W. and L.E. Weber, "Herbicide Trials for Yellow Nutsedge in Potatoes on Long Island," Proc. NE Weed Sci. Soc. 30:239-242 (1976).

<2086>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Plants; Bean, snap (PHASEOLUS VULGARIS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Effective control of weeds with no injury to snapbeans but severe injury of lima beans
COMMENTS: Profluralin safest on snapbeans and fluchloralin safest on lima beans of herbicides evaluated
REFERENCE: Ilnicki, R.D., D.J. Herman, and J. Somody, "Effects of Some Preplant Incorporated Herbicides on Weed Control in Snapbeans and Lima Beans," Proc. Northeast. Weed Sci. Soc. 29:197-198 (1975).

<2087>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Plants; Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Witchgrass, old- (PANICUM CAPILLARE); Bluegrass, annual (POA ANNUA); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; 4 locations in ND, SD, and MN
EFFECTS: Moderate to effective weed control with no adverse effect on potatoes
COMMENTS: Penoxalin preemergence or lightly incorporated treatment after seeding wheat gave excellent annual weed control and demonstrated good selectivity; penoxalin also demonstrated good to excellent weed control in potatoes either as preemergence or dragoff treatment; penoxalin treatments produced good yields in both crops
REFERENCE: Jorgenson, E.M., C.R. Wingfield, and G.I. Nzewi, "Use of Penoxalin Herbicide for Weed Control in Spring Grains and Potatoes," Proc. North Cent. Weed Cont. Conf. 30:72-74 (1975).

<2088>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Broadleaf weeds; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Pre-plant incorporated, preemergence, or postemergence sprays; 280 l./ha at 2 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1972 and 1973
EFFECTS: Moderate weed control with no adverse effect on beet
COMMENTS: Broadleaf weed control achieved in table beets with cycloate, CNP, pebulate, lenacil, pyrazon, IMC 3950, TCA + pyrazon, and pebulate followed by pyrazone; fair weed control achieved with EPTC, propachlor, and solubor; poor weed control obtained from CDEC, chlorpropham, pyrazon, and TCA; yields expressed as $/ha or tons/ha reduced by chlorpropham, lenacil, CNP, and TCA
REFERENCE: Phatak, S.C. and D.J. Cantliffe, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Table Beets," Hortsci. 10(3):271-273 (1975).

<2089>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 10.0 lb/A
APPLICATION METHODS: Preemergence spray; 35 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; soil -- Tifton sandy loam; time period -- 1959 and 1960
EFFECTS: Moderate weed control with slight damage of peanut but no adverse effect on yield
COMMENTS: Certain mixtures, which contained sesone, 2,1-DEP, or amiben mixed with DNBP, gave seasonal weed control on band-treated peanuts; compared to herbicides applied singly, mixtures not only increased spectrum of weeds controlled but also permitted use of lowest rate of each component on weeds for which it was most effective
REFERENCE: Hauser, E.W., W.C. Shaw, H.P. Harrison, and S.A. Parham, "Herbicides and Herbicide Mixtures for Weed Control in Peanuts," Weeds 10(2):139-144 (1962).

<2090>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-ethyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Broadleaf weeds; Grasses; Azalea (RHODENDRON OBTUSUM); Azalea (RHODODENDRON INDICUM); Holly (ILEX CRENATA); Juniper (JUNIPERUS CHINENSIS); Privet, waxy (LIGUSTRUM ACIDUM)
EXPERIMENTAL DOSE: 5.6 and 22.4 kg/ha
APPLICATION METHODS: Incorporated on pine bark then applied as mulch to rooted cuttings; mulch depth--1.27 cm
EXPERIMENTAL CONDITIONS: Shade house; nursery container culture; time period--1970 and 1971
EFFECTS: Effective weed control at both rates with no adverse effect on ornamentals
COMMENTS: All impregnated mulches except EPTC and diphenamid provided adequate long-season broadleaf weed

<2090> CONT.
control; long-season grass weed control acceptable with all herbicide-impregnated mulches except chlorpropham, chlorpropham plus PPG-124, and diphenamid; plant injury appeared on all five species of nursery stock with dichlobenil
REFERENCE: Fretz, T.A., "Herbicide-Impregnated Mulches for Weed Control in Container Nursery Stock," Sci. Hort. 1:165-170 (1973).

<2091>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Soybean (GLYCINE MAX);Grasses;Broadleaf weeds
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Preplant spray with soil incorporation (5 cm depth); preemergence spray; 188 l./ha; varied combinations of herbicides and types of applications studied
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy clay loam and Cecil sandy loam; 188 l./ha
EFFECTS: Effective control of grass weeds and moderate control of broadleaves with slight damage to soybean
COMMENTS: Sequential treatment of vernolate with linuron, prometryne, or chloramben ester controlled weeds more effectively in soybeans than did trifluralin or nitralin applied with the same preemergence treatments; soybean injury was not severe enough to reduce seed yields in any year.
REFERENCE: Johnson, B.J., "Effect of Herbicide Combinations on Weeds and Soybeans," Weed Sci. 19(6): 740-742 (1971).

<2092>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Soybean (GLYCINE MAX);Grasses;Broadleaf weeds
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Soil incorporated by rototiller; injection; postemergence spray; 188 to 282 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy loam; herbicides studied either 2 or 3 years; combinations of herbicides evaluated also
EFFECTS: Injection application at 2.24 kg/ha resulted in best weed control but slight damage to soybeans with no effect on yield
COMMENTS: Vernolate injected into sandy loam soil controlled higher percentage of early weeds in soybeans in 2 years out of 3 when compared with incorporated vernolate at same rate by conventional methods; late season weed control was enhanced by split applications of herbicides applied postemergence in sequence with vernolate; chloroxuron applied early postemergence plus linuron or prometryne applied in split applications as late and layby treatments gave the best weed control.
REFERENCE: Johnson, B.J., "Response of Weeds and Soy Beans to Vernolate and Other Herbicides," Weed Sci. 19(4):372-377 (1971).

<2093>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS);Panicum, Texas (PANICUM TEXANUM);Beggarweed, Florida (DESMODIUM TORTUOSUM); Sida, spiny (SIDA SPINOSA);Cocklebur, common (XANTHIUM PENSYLVANICUM);Sicklepod (CASSIA OBTUSIFOLIA);Grasses;Broadleaf weeds;Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 2.25, 2.50, and 3.0 lb/A
APPLICATION METHODS: Preplant spray; 13 to 38 gal/A.; postemergence spray; 30 psi
EXPERIMENTAL CONDITIONS: Field study; locations in 5 states (AL, FL, GA, NC, and VA); time period--1971 and 1972; evaluation times--varied, up to 161 days
EFFECTS: Effective control of grass weeds but only slight temporary control of broadleafs with slight damage to peanut
COMMENTS: Alachlor/dinoseb applied postemergence over vernolate improved control of Florida beggarweed, sicklepod, fall panicum and crabgrass, and over benefin improved control of Florida beggarweed, sicklepod, and yellow nutsedge; alachlor/dinoseb applied postemergence provided fair to good Florida beggarweed control.
REFERENCE: Andrews, O.N., F.D. Timmons, W.L. Currey, and G.A. Buchanan, "An Evaluation of Alachlor and Dinoseb Applied Postemergence in Peanuts," Proc. South. Weed Sci. Soc. 26:106-118 (1973).

<2094>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Cane, wild (SORGHUM BICOLOR); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: Field study; herbicide incorporated at 2-in depth
EXPERIMENTAL CONDITIONS: Plots included natural infestation of wild cane; wild cane planted 1-in. and 4-in. deep; 3-year study
EFFECTS: Approximately 50-60% wild cane control; better control of wild cane planted at 1-and 4-in. depth than in the natural infestation plot
COMMENTS: Herbicides more effective than cultivation, but combination gave best control of wild cane; trifluralin gave better control than vernolate and vernolate gave better control than DCPA; incorporation by rototillvator controlled wild cane better than rotary hoe incorporation
REFERENCE: Burnside, O.C., "Control of Wild Cane in Soybeans," Weed Sci. 16(1):18-22(1968).

<2095>
<2095>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Mustard, wild (BRASSICA KABER); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 6% EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate weed control except mustard (effective control) with no adverse effect on LIROPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<2096>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Grasses; Broadleaf weeds; Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplant incorporated; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 13 locations in Iowa
EFFECTS: Effective control of grasses and moderate control of broadleaf weeds with no adverse effect on soybean
COMMENTS: Dinitroaniline chemicals applied at proper rates for organic matter levels present provided good to excellent grass control; rate probably more critical for organic matter on BAS-3901, CG-10832 and dinitramine than for trifluralin; organic matter exceedingly critical for nitraline; vernolate provided good grass control and at most locations, better broadleaf control than dinitroaniline chemicals; preplant incorporated plus overlay treatment can increase broadleaf and overall weed control and usually result in less phototoxicity to the crop
REFERENCE: Jennings, V.M., D.W. Staniforth, and W.G. Lovely, "Soybean Herbicide Evaluations Across Iowa in 1973," Proc. N. Cent. Weed Contr. Conf. 28:42-45 (1973).

<2097>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-5)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2098>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Potato (SOLANUM TUBEROSUM); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: EC formulation; treatments applied as spray at 30 psi and 40 gpa volume; preplant incorporated application
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications for each experiment; plot size--4 rows or 12 ft x 20 ft; Sassafras loam soil; center 2 rows harvested for yield determination
EFFECTS: 73% broadleaf and 80% grass control; significant reduction in potato yield
COMMENTS: Herbicidal effectiveness increased when R-7465 combined with EPTC and vernolate
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

<2099>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Johnson grass (SORGHUM HALEPENSE); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3, 4, and 6 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: 2-year experiment; Loring silt loam, alachlor applied as check on seedling johnsongrass control; 13.3 X 40 ft plots
EFFECTS: First year--3 and 4 lb/A, 85 and 88% control respectively; second year--3, 4, and 6 lb/A, 95, 98, and 98% control respectively; corn yield best at 3 lb/A both years (no significant difference from weed-free check)
COMMENTS: Weed control increased with increased rate but corn yield decreased, slight depression in corn vigor
REFERENCE: Jeffery, L.S., J.T. Connell, and T.H. Morgan, Jr., "Johnsongrass Control in Corn Using Commercially-Available Herbicides," Tenn. Farm Home Sci. Prog. Rep. 93:38-40 (1975).

<2100>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 2.2, 3.4 and 4.5 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments to depth of 7.6 cm; spring treatments--2.2, 3.4 and 4.5 kg/ha; fall treatments--3.4 and 4.5 kg/ha
EXPERIMENTAL CONDITIONS: Four field tests--2 seeded in fall, 2 in spring; fall seedings in September, spring seedings in April; herbicide treatments were main plots, legumes were subplots; early injury and control ratings made 5 to 10 weeks after seeding, later observations made 3 to 4 weeks after initial recordings for spring planting and the following spring for fall plantings
EFFECTS: Alfalfa--low rate gave 10% early injury and 22% late injury, high rate gave 9% early injury and 22% late injury; clover--low rate gave 10% early and 26% late injury, high rate gave 25% early and 33% late injury; crownvetch--low rate gave 8% early and 24% late injury, high rate gave 17% early and 25% late injury; broadleaf weeds--low rate gave 88% early and 84% late control, high rate gave 94% early and 90% late control
COMMENTS: No apparent difference in legume injury from spring and fall treatments; results represent combined fall and spring observations
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<2101>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 3.0 lb/A; EC
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 40 gal/A; 730616 TeeJet spray tip at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Moderate control of weeds with no potato yield reduction in preplant incorporated applications
COMMENTS: Preplant incorporated herbicides R-7465, EPTC, and vernolate good single herbicides; increases in herbicidal effectiveness obtained when EPTC and vernolate combined with R-7465; alachlor alone excellent herbicide applied preemergence; increased weed control effectiveness resulted when this herbicide combined with linuron, chlorbromuron, metobromuron, methazole, or dinoseb
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

<2102>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3.0, 4.0, 6.0, and 8 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; unidentified antidote (Stauffer Chemical Co.) applied at 0.016 to 0.125 lb/A and evaluated; time period--1971 and 1972
EFFECTS: Moderate to severe damage to corn circumvented by use of antidote
COMMENTS: Without the antidote, vernolate caused substantial injury to corn; injury ranged from 8% at 3 lb per acre in 1971 to 94% at the 8-lb rate in 1972; when antidote included in the spray mixture there was no injury to corn in 1971 and only slight damage in 1972
REFERENCE: Buchanan, G.A., R.D. McLaughlin, and G. Ward, "Herbicide Antidotes for Crop Protection," Highl. Agric. Res. 19(4):8 (1972).

<2103>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Peanut (ARACHIS HYPOGAEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Junglerice (ECHINOCHLOA COLONUM); Bermudagrass (CYNODON DACTYLON); Nightshade (SOLANUM VILLOSUM)
EXPERIMENTAL DOSE: 3.0 kg/ha
APPLICATION METHODS: Postemergence spray; aqueous carrier-500 l./ha; 60 sq m plots
EXPERIMENTAL CONDITIONS: Field study; sprinkle irrigation 24 hr after herbicide application and every 2 wk thereafter; sandy loess soil; temperature--20 to 25 C; RH--51 to 68%; weekly hand weeding of controls; phosphorus addition--500 to 600 kg/ha; monthly cultivation when employed
EFFECTS: Effective weed control with application of herbicides singly, in combination, or in conjunction with monthly cultivation; no or minimal effect on peanut yield
COMMENTS: Evaluation of eleven herbicides or herbicide combinations; hand weeding most effective; benefin alone and benefin/terbutryn, alachlor/terbutryn, diphenamid/terbutryn, and benefin/alachlor combinations as effective as hand weeding with no adverse effect on peanut yield
REFERENCE: Amir, J. and N. Lifshitz, "Weed Control of Irrigated Peanuts in an Arid Zone," J. Agric. Sci. Camb. 86:623-626 (1976).

<2104>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 6.0 to 12.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: Effective weed control with damage of cotton

<2104>
<2104> CONT.
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<2105>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Soybean (GLYCINE MAX); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Preplant spray; soil incorporation by rototilling (5 cm); postemergence spray; 188-282 l/ha; 0.5% surfactant; lay by and directed sprays; varied combinations of herbicides and methods of application
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy loam and Cecil sandy clay loam; evaluation time--3, 5, 7 or 8, and 11 wks; time period--1968 to 1970
EFFECTS: Inconsistent results but moderate to effective control of grasses and slight to moderate control of broadleaf weeds with slight damage to soybeans in preplant applications
COMMENTS: When chloroxuron applied in sequence with split application of either linuron or prometryne, control of broadleaf weeds comparable to that obtained when preplant treatments applied in sequence with these postemergence treatments in 1969 and 1970; control of grasses by these postemergence treatments less effective than single preplant treatments
REFERENCE: Johnson, B.J., "Effects of Sequential Herbicide Treatments on Weeds and Soybeans," Weed Sci. 19(6):695-700 (1971).

<2106>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Peanut (ARACHIS HYPOGAEA); Plants
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Preplant, cracking, and postemergence applications; 187 l/ha; soil incorporation by injection and rototilling in some cases
EXPERIMENTAL CONDITIONS: Field study; soils--Tifton loamy sand and Greenville sandy clay loam
EFFECTS: Vernolate most effective as postemergence spray in conjunction with cultivation
COMMENTS: Vernolate more effective when used in combination with other herbicides by varied application methods; similar applications not similarly effective on the two different soils; no adverse effects on market quality or germination observed for any treatment
REFERENCE: Hauser, E.W., S.R. Cecil, and C.C. Dowler, "Systems of Weed Control for Peanuts," Weed Sci. 21(3):176-180 (1973).

<2107>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 2.2 and 4.5 kg/ha
APPLICATION METHODS: Postemergence spray application with soil incorporation by rototilling; 335 l/ha
EXPERIMENTAL CONDITIONS: Field application; removal of surviving tubers to greenhouse; evaluation time--6 wk (count of tuber germination)
EFFECTS: Moderately reduced tuber germination at higher application rate
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<2108>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: R-1607
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate control of weeds and no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<2109>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 3.36 kg/ha
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Field study, 3 years; 3 by 6 m plots; Mattapeake soil; randomized complete block

<2109> CONT.
design with 4 replications
EFFECTS: No soybean injury first year, minor injury other 2 years; good control of foxtail and nutsedge, poor ragweed control
REFERENCE: Parochetti, J.V., R.W. Feeny, and S.R. Colby, "Preemergence Herbicides plus Postemergence Chloroxuron on Soybeans," Weed Sci. 20(6):548-553 (1972).

<2110>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Soybean (GLYCINE MAX); Jimsomweed (DATURA STRAMONIUM)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: Preplanting incorporated treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies; Mattapex silt loam; 10 by 20 ft plots, 4 rows of soybeans, 4 replications; spring planting
EFFECTS: Moderate soybean injury; good jimsonweed control, especially early germinating jimsonweed
COMMENTS: Soybean injury almost unsatisfactory; combinations of herbicides also tested
REFERENCE: Parochetti, J.V., "Control of Jimsonweed and Three Broadleaved Weeds in Soybeans with Herbicides," Proc. Northeast. Weed Sci. 29:19-25 (1975).

<2111>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Preplanting incorporated at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: 20% stand reduction in soybeans; excellent weed control
COMMENTS: Herbicide combinations also tested
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<2112>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Poor sesame tolerance and good barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<2113>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: EPTC
PLANT: Bean, cluster (CYAMOPRIS TETRAGONOLOBA); Pigweed (AMARANTHUS HYBRIDUS); Groundcherry (PHYSALIS MINIMA); (FLAVERIA CONTRAYERBA); Dayflower (COMMELINA BENGHALENSIS); Purslane, sea- (TRIANTHEMA PORTULACASTRUM); (DIGERA ARVENSIS); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 2.5, 4.5, and 6.5 kg/ha
APPLICATION METHODS: Preplanting treatment
EXPERIMENTAL CONDITIONS: Field trials; randomized block design with 75 plots; net plot size 5 x 4 m; 3 replications; effects on weeds and bean recorded
EFFECTS: T. PORTULACASTRUM--poor to moderate control, best at 4.5 kg/ha 30 days after treatment; D. ARVENSIS--poor control; C. DACTYLON--poor control; broadleaves--moderate control 45 days after treatment at 6.5 kg/ha, poor control at 15, 30, and 60 days after treatment; bean--significant yield increase
COMMENTS: C. BENGHALENSIS, P. MINIMA, F. CONTRAYERBA, L. ASPERA, and C. MURALE grouped as broadleaves and tabulated together
REFERENCE: Singh, R.M. and S.C. Sharma, "Efficacy of Pre-sowing Application of Herbicides on Crop Weed Competition in Cluster Bean," Labdev J. Sci. Technol. 5(4):302-310 (1967).

<2114>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Grasses; Broadleaf weeds; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplant incorporated spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 10 locations in Iowa
EFFECTS: Moderate weed control with slight growth reduction of soybean
COMMENTS: Preplant incorporated herbicides trifluralin, dinitramine, profluralin, alachlor, and vernolate effectively reduced grassy weed populations; tank mix addition of metribuzin and bifenox broadened the spectrum of weeds controlled; overlay treatments of metribuzin were also equally effective in broadening the spectrum of weed control; preemergence treatments provided excellent examples of grass and broadleaf weed control in soybeans
REFERENCE: Jennings, V.E., "Soybean Herbicide Evaluations Across Iowa in 1974," Proc. North Cent. Weed Control Conf. 29:79-83 (1974).

<2115>
<2115>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Soybean (GLYCINE MAX); Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 2.80 and 3.36 kg/ha; 6% EC
APPLICATION METHODS: Preplant incorporated and preemergence sprays; incorporation by discing within 6 hr
EXPERIMENTAL CONDITIONS: Field study; soils--silt loam and loam
EFFECTS: Moderate control of nutsedge with slight adverse effect on soybean
COMMENTS: Corn and soybean tolerance to CGA-24705 excellent in all cases at rates providing acceptable control of yellow nutsedge; CGA-24705 more active than alachlor, regardless of method of application; although more effective against yellow nutsedge when applied preplant incorporated, CGA-24705 gave acceptable control following preemergence treatments
REFERENCE: Higgins, E.R., M.G. Schnappinger, and S.W. Pruss, "Yellow Nutsedge Control with CGA-24705 in Corn and Soybeans, "Proc. Northeast. Weed Sci. Soc. 29:9-16 (1975).

<2116>
CHEMICAL NAME: Carbamothioic acid, dipropyl-, S-propyl ester
CHEMICAL COMMON NAME: Vernolate
PLANT: Soybean (GLYCINE MAX); Panicum, fall (PANICUM DICHOTOMIFLORUM); Lamb's-quarters (CHENOPODIUM ALBUM); Galinsoga (GALINSOGA CILIATA); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 3.0 lb/A; 6% EC
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bucks silt loam
EFFECTS: Effective control of lambsquarters and pigweed with moderate control of panicum and galinsoga; slight to moderate injury to soybean with no yield reduction
COMMENTS: RH-2512 preemergence provided excellent control of large crabgrass, fall panicum, common lambsquarter, redroot pigweed, and smallflower galinsoga; RH-2915 preemergence provided weed control equivalent to RH-2512
REFERENCE: Hartnett, J.P., "Weed Control in Soybeans with RH-2512 and RH-2915," Proc. Northeast. Weed Sci. Soc. 29:4-8 (1975).

<2117>
CHEMICAL NAME: Carbamothioic acid, S,S'-[2-(dimethylamino)-1,3-propanediyl] ester
CHEMICAL COMMON NAME: Cartap
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 to 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: No leaf damage but stand reduction at all rates
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<2118>
CHEMICAL NAME: Carbofuran, 3-keto-
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 and 10.0 mM
APPLICATION METHODS: Addition to sterile solution
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated pea stem segments; radiolabeled IAA utilized
EFFECTS: No IAA decarboxylation or growth stimulation
COMMENTS: Carbofuran phenol and 3-hydroxy-carbofuran phenol found inhibitory to indole-3-acetic acid oxidase; metabolites stimulated plant growth in pea stem segment assay with low concentration of IAA
REFERENCE: Lee, T.T., "Insecticide-Plant Interaction: Carbofuran Effect on Indole-3-Acetic Acid Metabolism and Plant Growth," Life Sci. 18(2):205-210 (1976).

<2119>
CHEMICAL NAME: Carbon disulfide
CHEMICAL COMMON NAME: Carbon disulfide
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 1:2400 to 1:400 dilutions
APPLICATION METHODS: Soil soak--fumigant; 0.25 to 16 gal/sq ft
EXPERIMENTAL CONDITIONS: Field study; time period--1930 to 1939
EFFECTS: Significant numbers of apple trees injured at lowest rates when applied in sufficient quantity, e.g., 3 gal/sq ft
COMMENTS: Carbon disulphide emulsion, or dichlorethyl ether in solution gave satisfactory control of woolly apple aphid and did not cause preceptible injury to roots of apple; carbon disulphide burned roots and in some experiments killed trees
REFERENCE: Underhill, G.W. and J.A. Cox, "Carbon Disulphide and Dichlorethyl Ether as Soil Fumigants for the Woolly Aphid, EROISOMA LANIGERUM Hausm," Virginia Fruit 28(2):20-26 (1940).

<2120>
CHEMICAL NAME: Carbon disulfide
CHEMICAL COMMON NAME: Carbon disulfide
PLANT: Corn (ZEA MAYS); Wheat (TRITICUM AESTIVUM); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 200, 300, and 400 ml/cu m
APPLICATION METHODS: Fumigation for insect control
EXPERIMENTAL CONDITIONS: Laboratory study; seed at different moisture levels
EFFECTS: Reduced germination of corn and wheat seed at higher rates and seed moisture content with no adverse effect on germination of cotton seed
COMMENTS: Methyl bromide, carbon bisulphide, and phostoxin affected germination of corn and cotton; wheat less affected when using carbon bisulphide or phostoxin, but significantly impaired when using methyl bromide
REFERENCE: Kamel, A. H., E. Z. Fam, M. T. Mahdi, and E. M. Sheltawi, "The Phytotoxic Effect of Carbon Bisulphide, Methyl Bromide and Hydrogen Phosphide on the Germination of Seeds of Certain Field Crops," Bull. Ent. Soc. Egypt. Econ. Serv. 8:75-80 (1974).

<2121>
CHEMICAL NAME: Carbon monoxide
CHEMICAL COMMON NAME: CO
PLANT: Popinac (ACACIA FARNESIANA)
EXPERIMENTAL DOSE: 1.0 to 5.0%
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Environmental chamber; soil--2:2:1 mixture of perlite, sandy loam, and peat; light intensity--200 and 1800 ft-c; photoperiod--16 hr; temperture--29 C(day) and 24 C (night)
EFFECTS: Significant defoliation occurred for all variants but varied from 7 to 100% depending on whether grown in low or high light intensity
COMMENTS: When intact plants of 17 geographic variants grown at low-light intensities were exposed to 2% CO in air, 11 strains (Mexico, 8; Texas, 1; California, 1; Guatemala, 1) showed almost complete defoliation; The other six strains-from Brazil, Hawaii, Puerto Rico, Italy, Algeria, and Michoacan, Mexico-showed defoliation averaging from 23 to 70%
REFERENCE: McMillan, C. and J.M. Cope, "Response to Carbon Monoxide by Geographic Variants in ACACIA FARNESIANA," Amer. J. Bot. 56(6):600-602 (1969).

<2122>
CHEMICAL NAME: Carbonic acid, 1-methylethyl-2-(1-methylpropyl)-4,6-dinitrophenyl ester
CHEMICAL COMMON NAME: Dinobuton
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 50% WP formulation of dinobuton (Dessin)
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Significant growth reduction at 0.25% concentrations; leaves necrotic at 0.25 and 0.125% concentration
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<2123>
CHEMICAL NAME: Carbonodithioic acid, O-ethyl ester, sodium salt
PLANT: Plants
EXPERIMENTAL DOSE: 1 lb/square rod
APPLICATION METHODS: Water solution on aerial parts of herbaceous plants
EXPERIMENTAL CONDITIONS: Produced by following reactions: (1) C(2)H(5)OH+NaOH to C(2)H(5)ONa+H(2)O (2) C(2)H(5)ONa+CS(2) to OC(2)H(5)CS(2)Na
EFFECTS: Pronounced toxic effect
COMMENTS: Effects not clearly defined; sodium salt of ethyl xanthic acid
REFERENCE: Harvey, R.B., J. Zalar, and R.H. Landon, "Sodium Ethyl Xanthate as a Plant Poison," Science 84(2181):356 (1936).

<2124>
CHEMICAL NAME: Carbonodithioic acid, O-ethyl ester, potassium salt
PLANT: Pine, Scots (PINUS SYLVESTRIS); Spruce, sitka (PICEA SITCHENSIS); Larch, Japanese (LARIX sp.)
EXPERIMENTAL DOSE: 0.5, 1.0, and 2.0%
APPLICATION METHODS: Treatment when most seedlings in young true leaf stage; spray at 100 gpa
EXPERIMENTAL CONDITIONS: Pot studies; spraying performed in greenhouse but pots placed outside for test; watering when necessary; acute and chronic toxicity assessed; weed control not studied
EFFECTS: 32, 11, and 75% kill of pine (after 2 mo), spruce (after 15 days), and larch (after 1 mo), respectively, at 2.0%; some kill also recorded at lower concentrations
REFERENCE: Srivastava, T.N., "The Applications of Selective Herbicides to Forestry Practice," Indian For. 77:176-191 (1951).

<2125>
<2125>
CHEMICAL NAME: Cellulose, methyl ester
CHEMICAL COMMON NAME: Methocel
PLANT: Lychee (LITCHI CHINENSIS)
EXPERIMENTAL DOSE: 1:250, 1:500, and 1:1000
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Local chlorosis at leaf tip
COMMENTS: Lychee leaves susceptible to ionic and nonionic surfactants; injury due to wetting agents ranged from complete necrosis of leaves to chlorosis and mottling and premature leaf fall
REFERENCE: Nakata, S. and Y. Tanada, "Phytotoxicity of Wetting Agents on Lychee," J. Econ. Ent. 54(6):1074-1076 (1961).

<2126>
CHEMICAL NAME: CGA-14397
CHEMICAL COMMON NAME: CGA-14397
PLANT: Millet, foxtail (SETARIA ITALICA); Foxtail, green (SETARIA VIRIDIS); Foxtail, yellow (SETARIA GLAUCA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Grasses; Broadleaf weeds; Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.75 and 3.0 lb/A
APPLICATION METHODS: Preplant incorporated spray; 10 to 30 gal/A at 20 to 30 psi
EXPERIMENTAL CONDITIONS: Field study; locations in 6 states (MI, MO, NE, IL, IA, and OH)
EFFECTS: At 1.0 or 3.0 lb/A, effective control of foxtail millet with moderate control of remaining weeds and no adverse effect on soybean
COMMENTS: CGA-10832 gave good control of prevalent weed species throughout growing season; CGA-11607 and CGA-14397 gave inferior weed control compared to CGA-10832; weed control from trifluralin comparable at equivalent rates to CGA-10832, with no significant differences indicated
REFERENCE: LeBaron, H.M., R.R. Wilson, and T.D. Taylor, "Evaluation of CGA-10832 and Other Herbicides for Soybeans in the North Central States," Proc. N. Cent. Weed Contr. Conf. 26:44-48 (1971).

<2127>
CHEMICAL NAME: Chlorax
CHEMICAL COMMON NAME: Chlorax
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sowthistle, perennial (SONCHUS ARVENSIS)
EXPERIMENTAL DOSE: 10 to 12 lb/sq rd
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; combinations of herbicide treatments, seasonal application, cultivation, and cropping investigated over 3 yr period (1955-1957)
EFFECTS: Effective thistle control with 3-plus years residual effect
COMMENTS: Canada thistle and perennial sowthistle reacted to 2,4-D and MCPA; ester and amine forms of 2,4-D equally effective for sowthistle, while both and MCPA equal for Canada thistle; both herbicides prevent seed production, kill susceptible plants and weaken resistant plants
REFERENCE: Derscheid, L.A., R.L. Nash, and G.A. Wicks, "Thistle Control With Cultivation, Cropping and Chemicals," Weeds 9(1):90-102 (1961).

<2128>
CHEMICAL NAME: Chloric acid, sodium salt
CHEMICAL COMMON NAME: Sodium chlorate
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sowthistle, perennial (SONCHUS ARVENSIS)
EXPERIMENTAL DOSE: 5.0 lb/sq rd
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; combinations of herbicide treatments, seasonal application, cultivation, and cropping investigated over 3 yr period (1955-1957)
EFFECTS: Effective thistle control with 2 to 3 years residual effect
COMMENTS: Canada thistle and perennial sowthistle reacted to 2,4-D and MCPA; ester and amine forms of 2,4-D equally effective for sowthistle, while both and MCPA equal for Canada thistle; both herbicides prevent seed production, kill susceptible plants and weaken resistant plants
REFERENCE: Derscheid, L.A., R.L. Nash, and G.A. Wicks, "Thistle Control With Cultivation, Cropping and Chemicals," Weeds 9(1):90-102 (1961).

<2129>
CHEMICAL NAME: Chloric acid, sodium salt
CHEMICAL COMMON NAME: Atlacide
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sowthistle, perennial (SONCHUS ARVENSIS)
EXPERIMENTAL DOSE: 6.0 to 8.0 lb/sq rd
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; combinations of herbicide treatments, seasonal application, cultivation, and cropping investigated over 3 yr period (1955-1957)
EFFECTS: Effective thistle control with 2 to 3 years residual effect
COMMENTS: Canada thistle and perennial sowthistle reacted to 2,4-D and MCPA; ester and amine forms of 2,4-D equally effective for sowthistle, while both and MCPA equal for Canada thistle; both herbicides prevent seed production, kill susceptible plants and weaken resistant plants
REFERENCE: Derscheid, L.A., R.L. Nash, and G.A. Wicks, "Thistle Control With Cultivation, Cropping and Chemicals," Weeds 9(1):90-102 (1961).

<2130>
CHEMICAL NAME: Chloric acid, sodium salt, mixt. with boric acid (HBO2) sodium salt and N'-(4-chlorophenyl)-N,N-dimethylurea
CHEMICAL COMMON NAME: Chlorea
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 870 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control with no regrowth (3 mo)
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<2131>
CHEMICAL NAME: Chloric acid, sodium salt, mixt. with boric acid (HBO2) sodium salt and N'-(4-chlorophenyl)-N,N-dimethylurea
CHEMICAL COMMON NAME: Chlorea
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sowthistle, perennial (SONCHUS ARVENSIS)
EXPERIMENTAL DOSE: 6 to 8 lb/sq rd
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; combinations of herbicide treatments, seasonal application, cultivation, and cropping investigated over 3 yr period (1955-1957)
EFFECTS: Effective thistle control with 3-plus years residual effect
COMMENTS: Canada thistle and perennial sowthistle reacted to 2,4-D and MCPA; ester and amine forms of 2,4-D equally effective for sowthistle, while both and MCPA equal for Canada thistle; both herbicides prevent seed production, kill susceptible plants and weaken resistant plants
REFERENCE: Derscheid, L.A., R.L. Nash, and G.A. Wicks, "Thistle Control With Cultivation, Cropping and Chemicals," Weeds 9(1):90-102 (1961).

<2132>
CHEMICAL NAME: Chloroflurecol-methyl
CHEMICAL COMMON NAME: Chlorflurecol-methyl
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS);Bermudagrass, common (CYNODON DACTYLON);Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 0.12,1.25,12.5, and 125.0 ppm
APPLICATION METHODS: 5 sec immersion of intact plant in test solution
EXPERIMENTAL CONDITIONS: Greenhouse container culture; soil--Newe Yaar clay; evaluation time--4 and 6 wk
EFFECTS: Increased shoot growth or regrowth of all test plants at one or more lowest concentrations; decreased shoot growth at two highest concentrations
COMMENTS: Effects varied from stimulation to inhibition of aerial growth, increases in shoot number, and kill of plants
REFERENCE: Horowitz, M., "Effect of Growth Regulators on CYNODON DACTYLON (L.) Pers., SORGHUM HALEPENSE (L.) Pers., and CYPERUS ROTUNDUS L.," Weed Res. 12(1):11-20 (1972).

<2133>
CHEMICAL NAME: Cholest-5-en-3-ol(3 beta)-
CHEMICAL COMMON NAME: Cholesterol
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 to 10 micro g/plant; 0.05% Tween 20 and ethanol
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: No adverse or stimulatory effect
COMMENTS: Estrone, 17-beta-estradiol, and beta-sitosterol increased growth of pea; treatment with cholesterol and testosterone resulted in no observable stimulation of growth
REFERENCE: Kopcewicz, J., "Influence of Steroids on the Growth of the Dwarf Pea," Kurze Originalmitteilungen 56(5):287 (1969).

<2134>
CHEMICAL NAME: Chromium
CHEMICAL COMMON NAME: Chromium
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 256-634 ppm (natural soil component); 75-225 ppm (soil amendment, greenhouse study)
APPLICATION METHODS: Field and greenhouse studies; natural soil component in one study phase; soil amendment in greenhouse phase
EXPERIMENTAL CONDITIONS: Soils derived from basaltic rock in field study and sandy loam for greenhouse study
EFFECTS: Chlorosis ranged from very light to very severe and was directly correlated with concentration of nickel, cobalt, and chromium in soil; growth in height and yield was also affected; nickel and chromium were shown to be at toxic levels while cobalt was not; degrees of toxicity were related to levels of elements in soil extracts and in oat plants; chlorotic leaf banding resulted from nickel toxicity
COMMENTS: Problem of heavy metal toxicity in Australian crop soils studied; results applicable to many other countries
REFERENCE: Anderson, A.J., D.R. Meyer, and F.K. Meyer, "Heavy Metal Toxicities: Levels of Nickel, Cobalt, and Chromium in the Soil and Plants Associated with Visual Symptoms and Variation in the Growth of an Oat Crop," Aust. J. Agric. Res. 24:557-571 (1973).

<2135>
<2135>
CHEMICAL NAME: Chromium
CHEMICAL COMMON NAME: Chromium
PLANT: Waterweed (ELODEA CANADENSIS); Bentgrass, Rhode Island (AGROSTIS TENUIS)
EXPERIMENTAL DOSE: 0.2 to .5 mg/l in river water
APPLICATION METHODS: Waste from chromate manufacture
EXPERIMENTAL CONDITIONS: Natural flowing river; greenhouse experiments -- plants grown over waste (no chromium concentration given) with 2.5 cm soil and 5.0 cm soil on top, some pots watered from below, some from above
EFFECTS: Waterweed was absent 200 m and 1.5/km downstream, but present upstream from effluent entry; pot experiments -- bentgrass showed less injury when watered from above, plants in the deeper soil showed less injury, dead plants present at both soil depths
COMMENTS: River chromium concentration (0.2 to 0.5 mg/l) did not vary even 1.5 km downstream from effluent entry; one further pot experiment using 15 cm depth soil over waste -- bentgrass appeared healthy but contained 100 mg chromium/kg dry matter
REFERENCE: Breeze, V.G., "Land Reclamation and River Pollution Problems in the Croal Valley caused by Waste from Chromate Manufacture," J. Appl. Ecol. 10(2):513-525 (1973).

<2136>
CHEMICAL NAME: Cobalt
CHEMICAL COMMON NAME: Cobalt
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 20-778 ppm (natural soil component); 75-225 ppm (soil amendment, greenhouse study)
APPLICATION METHODS: Field and greenhouse studies; natural soil component in one study phase; soil amendment in greenhouse phase
EXPERIMENTAL CONDITIONS: Soils derived from basaltic rock in field study and sandy loam for greenhouse study
EFFECTS: Chlorosis ranged from very light to very severe and was directly correlated with concentration of nickel, cobalt, and chromium in soil; growth in height and yield was also affected; nickel and chromium were shown to be at toxic levels while cobalt was not; degrees of toxicity were related to levels of elements in soil extracts and in oat plants; chlorotic leaf banding resulted from nickel toxicity
COMMENTS: Problem of heavy metal toxicity in Australian crop soils studied; results applicable to many other countries
REFERENCE: Anderson, A.J., D.R. Meyer, and F.K. Meyer, "Heavy Metal Toxicities: Levels of Nickel, Cobalt, and Chromium in the Soil and Plants Associated with Visual Symptoms and Variation in the Growth of an Oat Crop," Aust. J. Agric. Res. 24:557-571 (1973).

<2137>
CHEMICAL NAME: Cobalt
CHEMICAL COMMON NAME: Cobalt
PLANT: Duckweed (LEMNA VALDIVIANA)
EXPERIMENTAL DOSE: 0.001 to 1.000 ppm
APPLICATION METHODS: Addition to culture solution in which plants were growing
EXPERIMENTAL CONDITIONS: Field study; metal concentrations determined from specimens collected
EFFECTS: No toxic effect but bioaccumulation in natural waters
COMMENTS: Significant concentration effect for metals analysed comparing water concentrations with plant levels; high levels of manganese and iron occurred in plants; only for these two metals was a significant correlation found between water and plant concentrations when compared on an individual basis; lead and cadmium also showed a quite good fit
REFERENCE: Hutchinson, T.C. and H. Czyrska, "Heavy Metal Toxicity and Synergism to Floating Aquatic Weeds," Verh. Internat. Verein. Limnol. 19:2102-2111 (1975).

<2138>
CHEMICAL NAME: Copper
CHEMICAL COMMON NAME: Coppersan
PLANT: Barley (HORDEUM VULGARE); Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.025%
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Reduced seed germination and seedling injury of barley and chromosome aberrations of barley and broad bean
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<2139>
CHEMICAL NAME: Copper chloride
CHEMICAL COMMON NAME: Copper chloride
PLANT: Charlock, yellow (BRASSICA ARVENSIS); Charlock, white (RAPHANUS RAPHANISTRUM); Pennycress, field (THLASPI ARVENSE); Mustard, treacle (ERYSIMUM CHEIRANTHOIDES); Goosefoot (ATRIPLEX PATULA); Lamb's-quarters (CHENOPODIUM ALBUM); Mayweed, scentless (MATRICARIA INODORA); Cornflower (CENTUREA CYANUS); Chamomile, wild (MATRICARIA CHAMOMILLA); Knotweed (POLYGONUM AVICULARE); Buckwheat, wild (POLYGONUM CONVOLVULUS); Venus comb (SCANDSIZ PECTEN-VENERIS); Poppy, field or corn (PAPAVER RHOEAS); Fumitory, common (FUMARIA OFFICINALIS); Parsley-piert (ALCHEMILLA MICROCORPA); Spurrey, corn (SPERGULA ARVENSIS); Hempnettle (GALEOPSIS TETRAHIT); Speedwell, ivy-leaf (VERONICA HEDERIFOLIA); Barley (HORDEUM VULGARE); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 3.0 to 4.0 %
APPLICATION METHODS: Foliar spray; 100 gal/A

<2139> CONT.
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective control of charlock, pennycress, mustard, bearbind, and speedwell with no effect on remaining plants; no adverse effect on oats and barley
COMMENTS: Copper chloride at higher concentrations and sulphuric acid gave small increases in yield; 4-chloro-3-methyl-phenoxyacetic acid, had no adverse effect on spring and autumn-sown cereals; at higher concentrations may cause reduction in yield of spring oats and barley
REFERENCE: Blackman, G.E., "A Comparison of Certain Plant-Growth Substances With Other Selective Herbicides," Nature 155(3939):500-501 (1945).

<2140>
CHEMICAL NAME: Copper chloride
CHEMICAL COMMON NAME: Copper chloride
PLANT: Corn (ZEA MAYS); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 120, 194, and 343 ppm
APPLICATION METHODS: Addition to sludge which was then added to soil to obtain concentration levels reported
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Warsaw sandy loam; pH--6.4 to 6.6, photoperiod--12 hr; temperature--18 to 27 C; evaluation time--6 wk; corn and rye "crops" rotated (corn/rye/corn)
EFFECTS: Effect of Cu quite large (second only to Zn) in crop yield reduction (18 to 98%)
COMMENTS: Yields decreased as Cu and Zu concentration of sludge increased; Ni had no appreciable effect; yields were increased significantly as the sludge Cr concentration increased, indicating that Cr may be inhibiting the uptake or translocation of other metals
REFERENCE: Cunningham, J.P., J.A. Ryan, and D.R. Keeney, "Phytotoxicity in and Metal Uptake from Soil Treated with Metal-Amended Sewage Sludge," J. Envir. Qual. 4(4):455-460 (1975).

<2141>
CHEMICAL NAME: Copper hydroxide
CHEMICAL COMMON NAME: Cupric hydroxide
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 2.0 lb/100 gal; 75-150 gal/A
APPLICATION METHODS: Postemergence spray; weekly application
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Marketable fruit yield reduced
COMMENTS: Chlorothalonil, cyclic anhydrosulfides and disulfides, zinc ion + maneb, and zinc ion + maneb + s-triazine gave excellent control of late blight; same treatments plus several zinc ion + maneb + copper combinations controlled leafmold
REFERENCE: Jones, J.P., "Evaluation of Some Fungicide Treatments for Phytotoxicity to Tomato and Control of Late Blight and Leafmold," Plant Dis. Rep. 57(7):612-614 (1973).

<2142>
CHEMICAL NAME: Copper oxychloride
CHEMICAL COMMON NAME: Copper dust
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Little or no adverse effect on germination or seedlings but some chromosome fragmentation
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<2143>
CHEMICAL NAME: Copper sulfate
CHEMICAL COMMON NAME: Copper sulfate
PLANT: Hyacinth, water (EICHHORNIA HASTAEFOLIA)
EXPERIMENTAL DOSE: 5 to 45 ppm
APPLICATION METHODS: Addition to water containing test plants
EXPERIMENTAL CONDITIONS: Field study; plants and water contained in washtubs maintained outdoors
EFFECTS: No kill at 45 ppm but some leaf browning
COMMENTS: Dwarfing especially noted at low initial doses of santobrite, but specimens treated with low dosages of copper sulphate and beneclor seemed to thrive better than controls; initial dose of santobrite caused yellowing of stalks and withering of leaves; further applications damaged tissues and dwarfed new leaves
REFERENCE: Hirsch, A.A., "Toxic Effects of Sodium Pentachlorphenate and Other Chemicals on Water Hyacinth," Botan. Gaz. 103:620-621 (1942).

<2144>
CHEMICAL NAME: Copper sulfate
CHEMICAL COMMON NAME: Copper sulfate
PLANT: Cotoneaster (COTONEASTER DIVARICATA)
EXPERIMENTAL DOSE: 0.05, 0.1, 0.2, 0.3, 0.4, 0.8 and 4.0%
APPLICATION METHODS: Copper sufate applied to burlap root balls
EXPERIMENTAL CONDITIONS: Root balls of established plants wrapped in 213 g jute burlap; burlap treated with solutions of chemical; plants replanted in 1 gal containers in mixture of 1 soil:1 sand:1 perlite medium; after 15 wk growth, plants pruned to check new growth for copper toxicity

<2144>
<2144> CONT.
EFFECTS: Concentrations of 0.05 to 0.8% did not significantly alter fresh weight of trimmings at 15 wk or fresh weight of entire plant at 40 wks when compared with control; 4% caused about 40% reduction in fresh weight of trimmings and about 35% reduction in weight after 40 wk; 75% survival at 0.1 and 0.2%, 50% survival at 0.4 and 0.8%, and 25% at 4.0%; toxic to roots above 0.2%
COMMENTS: Copper sulfate added to slow deterioration of burlap root balls after planting
REFERENCE: Kuhns, L.J. and T.D. Sydnor, "Phytotoxicity of Copper Treated Burlap on Balled and Burlapped COTONEASTER DIVARICATA Rehd. & Wils," Hortscience 10(6):613-614 (1975).

<2145>
CHEMICAL NAME: Copper sulfide
CHEMICAL COMMON NAME: Copper blue
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Little or no adverse effect on germination or seedlings but some chromosome fragmentation
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<2146>
CHEMICAL NAME: Cresylate, ammoniumdinitro-o-
PLANT: Charlock, yellow (BRASSICA ARVENSIS); Charlock, white (RAPHANUS RAPHANISTRUM); Pennycress, field (THLASPI ARVENSE); Mustard, treacle (BRYSIMUM CHEIRANTHOIDES); Goosefoot (ATRIPLEX PATULA); Lamb's-quarters (CHENOPODIUM ALBUM); Mayweed, scentless (MATRICARIA INODORA); Cornflower (CENTUREA CYANUS); Chamomile, wild (MATRICARIA CHAMOMILLA); Knotweed (POLYGONUM AVICULARE); Buckwheat, wild (POLYGONUM CONVOLVULUS); Venus comb (SCANDSIZ PECTEN-VENERIS); Poppy, field or corn (PAPAVER RHOEAS); Fumitory, common (FUMARIA OFFICINALIS); Parsley-piert (ALCHEMILLA MICROCORPA); Spurrey, corn (SPERGULA ARVENSIS); Hempnettle (GALEOPSIS TETRAHIT); Speedwell, ivy-leaf (VERONICA HEDERIFOLIA); Barley (HORDEUM VULGARE); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.3 and 1.2 %
APPLICATION METHODS: Foliar spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective weed control except knotgrass, Venus comb, and speedwell with no adverse effect on oats and barley
COMMENTS: Copper chloride at higher concentrations and sulphuric acid small gave increases in yield; 4-chloro-3-methyl-phenoxyacetic acid, had no adverse effect on spring and autumn-sown cereals; at higher concentrations may cause reduction in yield of spring oats and barley
REFERENCE: Blackman, G.E., "A Comparison of Certain Plant-Growth Substances With Other Selective Herbicides," Nature 155(3939):500-501 (1945).

<2147>
CHEMICAL NAME: Crotalananium, 13,18-didehydro-14,19-dihydro-8,12-dihydroxy-4,14-dimethyl-, (8xi,12xi)
CHEMICAL COMMON NAME: Emiline
PLANT: Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 10(-6) and 10(-8) mole/ml
APPLICATION METHODS: Solution application
EXPERIMENTAL CONDITIONS: Onions grown in tap water until roots 2 to 3 cm long; onions halved--one half placed in test solution, other half in tap water; root length measured before and after 4, 24, and 48 hr exposure
EFFECTS: Growth inhibited at 10(-6) mole/ml; antimitotic activity producing tropokinesis, pycnosis, fragmentation of chromosomes in anaphases, and mitodepression recorded
COMMENTS: Emiline--alkaloid isolated from EMILIA FLAMMEA Cass.
REFERENCE: Kohlmunzer, S., J. Grzybek, and H. Tomczyk, "Investigation on the Biological Activity of Emiline Using Phytobiological Tests," Pol. J. Pharmacol. and Pharm. 25:293-297 (1973).

<2148>
CHEMICAL NAME: Cryolite
CHEMICAL COMMON NAME: Cryolite
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.5 lb/40 gal water; 1.0 lb Volclay bentonite
APPLICATION METHODS: Foliar spray; 80 psi; two or five applications
EXPERIMENTAL CONDITIONS: Field study; powdered derris root contained 4% rotenone
EFFECTS: Five applications reduced corn yield
COMMENTS: All spray applications gave an increase in borer-free ears; sprays also gave reductions in borer populations; all sprays used with exception of two applications of cryolite showed profits; five applications of derris spray most profitable
REFERENCE: Stirrett, G.M. and R.W. Thompson, "Spraying for the Control of the European Corn Borer in Sweet Corn," Ann. Rept. Ent. Soc. Ontario 71:9-15 (1940).

<2149>
CHEMICAL NAME: Cyanamide, calcium salt
PLANT: Bermudagrass, common (CYNODON DACTYLON); Chickweed, common (STELLARIA MEDIA); Clover, hop (TRIFOLIUM AGARIUM); Clover, white (TRIFOLIUM REPENS); Dandelion, common (TARAXACUM OFFICINALE); Mayweed (ANTHEMIS COTULA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Honeysuckle, Japanese (LONICERA JAPONICA); Bitter-weed (HELENIUM TENUIFOLIUM); Chickweed, mouse-ear (CERASTIUM VISCOSUM); Cranesbill (GERANIUM CAROLINIANUM); Wartcress, lesser (CORONOPUS DIDYMUS); Cudweed (GNAPHALIUM PURPUREUM); Clover, bur (MEDICAGO ARABICA); Clover, carolina (TRIFOLIUM sp.); Medick, black (MEDICAGO LUPULINA); Dandelion, dwarf (KRIGIA VIRGINICA); Henbit (LAMIUM AMPLEXICAULE); Lespedeza (LESPEDEZA STRIATA); Peppergrass (LIPIDIUM VIRGINICUM); Plantain, white (PLANTAGO VIRGINICA); Sorrell, sheep (RUMEX ACETOSELLA); Sorrell, wood (OXALIS STRICTA); Toadflax, old-field (LINARIA CANADENSIS); Sedge, broom (ANDROPOGON VIRGINICUS); Dock (RUMEX sp.); Carpetgrass (AXONOPUS COMPRESSUS); Centipede grass (EREMOCHLOA OPHIUROIDES); Dallisgrass (PASPALUM DILATATUM); Bentgrass, purple (AGROSTIS HYEMALIS); Fleabane (ERIGERON sp.); Primrose, evening (OENOTHERA LACINIATA); Poke weed (PHYTOLACCA DECONDRA); Plantain, English (PLANTAGO LANCEOLATA); Garlic, wild (ALLIUM VINEALE); Weeds
EXPERIMENTAL DOSE: 600, 1000, 1200, 1500, 2000, and 3000 lb/A
APPLICATION METHODS: Broadcast by hand in middle of day; granular formulation
EXPERIMENTAL CONDITIONS: Experiment 1--effect on bermudagrass studied; all doses tested, weeds not identified, various application dates; experiment 2--plants listed above except bermudagrass studied at 2000 lb/A
EFFECTS: Experiment 1--1000 lb/A minimum to kill all weeds, treatments after March 1 of 2000 lb/A or greater injured bermudagrass but no bermudagrass injury when applied before March 1; experiment 2--broom sedge, dock, carpet grass, dallis grass, purple bent grass, flea-bane, honeysuckle, evening primrose, poke weed English plantain, and wild garlic not killed at 2000 lb/A, other plants listed above except bermudagrass killed at 2000 lb/A
COMMENTS: Application by March 1 necessary to kill Italian rye grass; bermuda grass injury from treatments after March 1 only temporary; granular and powdered cyanamide equally effective; preferable application time, January or early February; cyanamide treatments should be confined to bermudagrass lawns; not for use around pines or other acid soil plants; cyanamide not recommended for Italian rye grass control in lawns; control of annuals more effective than perennials
REFERENCE: Sturkie, D.G., "Control of Weeds in Lawns with Calcium Cyanamide," J. Am. Soc. Agron. 29(10):803-808 (1937).

<2150>
CHEMICAL NAME: Cyanamide, calcium salt
CHEMICAL COMMON NAME: Cyanamid
PLANT: Radish (RAPHANUS SATIVUS); Ryegrass, perennial (LOLIUM PERENNE); Bentgrass, black (AGROSTIS GIGANTEA); Plants; Redtop (AGROSTIS ALBA); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 50 to 125 lb/1000 sq ft
APPLICATION METHODS: Added to soil
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: At 75 lb rate, effective weed control with reduced germination of radish, red top, and ryegrass
COMMENTS: Several fertilizers and chemicals inhibited weed growth either by killing seeds or by killing seedlings shortly after germination; materials applied dry or as spray solutions and thoroughly mixed by cultivation or raking into upper 2 or 3 inches of soil; period of time after treatment before grass, radishes, alfalfa, or seedlings of tomato, cabbage, or other crops could be planted safely varied with different materials and amounts applied; sterilizing soils with fertilizers or chemicals appears very practical method of controlling weeds and fertilizing seedbeds in one operation; especially true of fertilizers which do not appreciably alter soil complex and which do not leave residual toxicity for long periods
REFERENCE: DeFrance, J.A., R.S. Bell, and T.E. Odland, "Killing Weed Seeds in the Grass Seedbed by the Use of Fertilizers and Chemicals," J. Am. Soc. Agron. 39:530-535 (1947).

<2151>
CHEMICAL NAME: Cyanamide, calcium salt
CHEMICAL COMMON NAME: Cyanamid
PLANT: Pea, sweet (PISUM SATIVUM); Broadleaf weeds
EXPERIMENTAL DOSE: 200 to 400 lb/A; G
APPLICATION METHODS: Broadcast
EXPERIMENTAL CONDITIONS: Field study; 22 locations in NY
EFFECTS: Effective broadleaf weed control at 225 to 300 lb/A with no adverse effect on pea
COMMENTS: Cyanamide treatments markedly increased yield, and improved quality of peas as measured by tenderometer; excellent weed control
REFERENCE: Hahn, P., "Calcium Cyanamide for Pre-Emergence Weed Control and Fertilization in Canning Peas, New York State, 1950," Proc. N.E. Weed Cont. Conf. 5:119-123 (1951).

<2152>
CHEMICAL NAME: Cyanamide, calcium salt
CHEMICAL COMMON NAME: Calcium cyanamide
PLANT: Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 143 kg/ha
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field/greenhouse study; field herbicide application and seed collecting; greenhouse pot culture for seed viability; annual applications for 12 yr; abnormal plants produced from some viable seed
EFFECTS: Reduced seed survival
COMMENTS: Reduction in total weed seeds by different control measures was: DNOC greater than 2,4-D greater than calcium cyanamide greater than MCPA greater than "rotation" greater than harrow; rotation was a rotation of MCPA, DNOC, calcium cyanamide, and harrowing
REFERENCE: Hurle, K., "Effect on Long-Term Weed Control Measures on Viable Weed Seeds in the Soil," Proc. 12th Brit. Weed Contr. Conf. 12(3):1145-1152 (1974).

<2153>
<2153>
CHEMICAL NAME: Cyanamide, calcium salt
CHEMICAL COMMON NAME: Cyanamid
PLANT: Plants; Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 200 and 400 lb/A; G
APPLICATION METHODS: Preemergence spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight weed control with no adverse effect on lima bean
COMMENTS: Premerge, Dow General and K-1131-Na, and all dinitros, gave excellent control of weeds with no bean crop injury for two months
REFERENCE: Jacob, W.C., "Pre-Emergence Weed Control in Lima Beans and Cauliflower," Proc. N.E. Weed Cont. conf. 5:1-5 (1951).

<2154>
CHEMICAL NAME: Cyanamide, disodium salt
CHEMICAL COMMON NAME: Sodium cyanamid
PLANT: Alfalfa (MEDICAGO SATIVA); Trefoil, birdsfoot (LOTUS CORNICULATUS); Clover, red (TRIFOLIUM PRATENSE)
EXPERIMENTAL DOSE: 9 to 200 lb/A
APPLICATION METHODS: Foliar spray (40 to 400 gal/A) and dusting (40 to 200 lb/A)
EXPERIMENTAL CONDITIONS: Field study; time period--1948 to 1950
EFFECTS: Effective drying out of seed crops with no adverse effect on seed germination; spray more effective than dust
COMMENTS: Complete top-killing not essential for satisfactory combining; drying out of about 80 per cent of top-growth of alsike, alfalfa, and red clover permitted good threshing without appreciable mixture of seed with shattered leaf and stem material; pre-harvest treatment of birdsfoot trefoil effective in killing top-growth and in delaying by several days dehiscence of seed pods, especially those immature at time of treatment
REFERENCE: Cooper, G. S. and W. G. Corns, "Pre-Harvest Chemical Top Killing of Legume Seed Crops. II. General Effects of Cyanamid Compounds," Scien. Agr. 32:281-284 (1952).

<2155>
CHEMICAL NAME: Cyanic acid, potassium salt
CHEMICAL COMMON NAME: Potassium cyanate
PLANT: Alfalfa (MEDICAGO SATIVA); Trefoil, birdsfoot (LOTUS CORNICULATUS); Clover, red (TRIFOLIUM PRATENSE)
EXPERIMENTAL DOSE: 9 to 200 lb/A
APPLICATION METHODS: Foliar spray (40 to 400 gal/A) and dusting (40 to 200 lb/A)
EXPERIMENTAL CONDITIONS: Field study; time period--1948 to 1950
EFFECTS: Effective drying out of seed crops with no adverse effect on seed germination; spray more effective than dust
COMMENTS: Complete top-killing not essential for satisfactory combining; drying out of about 80 per cent of top-growth of alsike, alfalfa, and red clover permitted good threshing without appreciable mixture of seed with shattered leaf and stem material; pre-harvest treatment of birdsfoot trefoil effective in killing top-growth and in delaying by several days dehiscence of seed pods, especially those immature at time of treatment
REFERENCE: Cooper, G. S. and W. G. Corns, "Pre-Harvest Chemical Top Killing of Legume Seed Crops. II. General Effects of Cyanamid Compounds," Scien. Agr. 32:281-284 (1952).

<2156>
CHEMICAL NAME: Cyanic acid, potassium salt
CHEMICAL COMMON NAME: Aero Cyanate W.K.
PLANT: Spinach (SPINACIA OLERACEA); Plants
EXPERIMENTAL DOSE: 20 and 30 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; single and double spinach seeding rates and normal and delayed times
EFFECTS: Effective weed control (delayed seeding) with no adverse effect on spinach
COMMENTS: No chemical increased yield of spinach; two chemicals in normal seeding plots and 5 chemicals in delayed seeding plots gave as good yield as untreated and significant increase in weed control
REFERENCE: Noll, C.J. and M.L. Odland, "Pre-Emergence Weeding of Spinach With Chemical Herbicides," Proc. N.E. Weed Cont. Conf. 5:115-117 (1951).

<2157>
CHEMICAL NAME: Cyanic acid, potassium salt
CHEMICAL COMMON NAME: Potassium cyanate
PLANT: Crabgrass (DIGITARIA sp.);Broadleaf weeds; Gladiolus
EXPERIMENTAL DOSE: 75 and 150 lb/A
APPLICATION METHODS: Basal postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--sandy clay loam
EFFECTS: Effective weed control with no adverse effect on gladiolus
COMMENTS: Potassium cyanate and PMAS applied as postemergence soil treatments, gave promising control of crabgrass and certain broad-leaved weeds without injury to gladiolus
REFERENCE: Gianfagna, A.J., "Gladiolus Weed Control," N.Y. State Flower Growers Bull. 43:2-3 (1949).

<2158>
CHEMICAL NAME: Cyanic acid, potassium salt
CHEMICAL COMMON NAME: Potassium cyanate
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 8.0 to 16.0 lb/A; 0.25% Triton X-100
APPLICATION METHODS: Foliar spray, 360 gal/A; 3 weekly applications
EXPERIMENTAL CONDITIONS: Field study; time period--1948 to 1950
EFFECTS: Effective crabgrass control at highest rates with very slight turfgrass damage
COMMENTS: S-1840, S-1980, and S-1998 gave crabgrass control equivalent to several phenyl mercury compounds and potassium cyanate; essentially no injury evident 36 days after treatment
REFERENCE: Engel, R.E. and R.J. Aldrich, "Three New Compounds for controlling Crabgrass in Turf," Proc. N.E. Weed cont. Conf. 5:151-160 (1951).

<2159>
CHEMICAL NAME: Cyanide, 2,6-dichlorobenzyl-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: 10(-4) M extremely phytotoxic to alfalfa and tomatoes, strongly toxic to clover, pigweed, and mustard, moderately toxic to ryegrass; 10(-5) M strongly toxic to clover, moderately toxic to pigweed, alfalfa, and tomatoes, minor toxicity to ryegrass and mustard; minor or no phytotoxicity at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<2160>
CHEMICAL NAME: Cyathin
CHEMICAL COMMON NAME: Cyathin
PLANT: Radish (RAPHANUS SATIVUS); Pea, sweet (PISUM SATIVUM); Timothy (PHLEUM PRATENSE); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 10 to 720 ppm
APPLICATION METHODS: Seed soaking; seedling root immersion; excised tomato root
EXPERIMENTAL CONDITIONS: Laboratory study; environmental chamber; light intensity--660 ft c; temperature--65 F (day) and 55 F (night); evaluation period--up to 10 da
EFFECTS: Germination of all seed inhibited 100% at highest concentrations; death of radish in root immersion at 45 ppm and stunting of pea and tomato in root immersion; 70-90% root inhibition in tomato excised root evaluation
COMMENTS: Seed germination and seedling growth adversely affected; root system in particular very strongly inhibited; secondary laterals as well as root hairs appeared completely lacking from cyathin-treated seedlings
REFERENCE: Johri, B.N., "Phytotoxic Properties of Cyathin," Hindust. Antibiotic Bull. 14(4):175-178 (1972).

<2161>
CHEMICAL NAME: Cyclobuta(cd)pentalen-2-one, decachlorotetracyclo-1,3,4-metheno-2H-
CHEMICAL COMMON NAME: Decachlorotetracyclo-1,3,4-metheno-2-H-cyclobuta(cd)pentalen-2-one
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<2162>
CHEMICAL NAME: Cyclohexan-1-one, 2-carbethoxy-2-pentyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 75; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2163>
<2163>
CHEMICAL NAME: Cyclohexan-1-one, 2-methyl-3-dimethylmalonyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 26; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2164>
CHEMICAL NAME: Cyclohexan-1-one, 2-methyl-3-pentyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 56; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2165>
CHEMICAL NAME: Cyclohexane, (1,1-dimethylethyl)-
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Moderate damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2166>
CHEMICAL NAME: Cyclohexane, ethyl
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Severe damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2167>
CHEMICAL NAME: Cyclohexane, ethyl-
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) at 40.8 and 66.4x10(-5)M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<2168>
CHEMICAL NAME: Cyclohexane, methyl-
CHEMICAL COMMON NAME: Methylcyclohexane
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) at 121 and 192x10(-5) M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<2169>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)
CHEMICAL COMMON NAME: Grammexane
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 0 - 200 lb/A
APPLICATION METHODS: 0.5% dust formulation
EXPERIMENTAL CONDITIONS: Growth of crop observed and cured leaves examined
EFFECTS: No visible effect
COMMENTS: Grammexane used as insecticide
REFERENCE: Mitchell, B.L., "Preliminary Observations on the Effect on Tobacco of Soil Applications of Grammexane," Rhod. Agric. J. 43:393(1946).

<2170>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
CHEMICAL COMMON NAME: Lindane
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.25, and 2.0 oz/bushel of seed
APPLICATION METHODS: Seed treatment; WP formulations of all doses, EC formulation of 1.0 oz/bushel dose
EXPERIMENTAL CONDITIONS: Experiment 1--field study, slurry treatments of seed, 18-ft row plots containing 100 seeds, 8 replications, 1.25-oz rate tested, 19-month old seeds; experiment 2--field study, 20-ft rows with 100 seeds/row, 4 replications, randomized complete block design, highly vivable seeds, all rates except 1.25 oz tested
EFFECTS: Experiment 1--significant decrease in number of emerged plants and significant increase in mean emergence period; Experiment 2--no appreciable injury except at 2-oz rate where germination injury was recorded as slight
COMMENTS: Older experiment 1 seeds apparently less resistant
REFERENCE: Starks, K.J. and J.H. Lilly, "Insecticide Seed Treatment of Soybeans in Relation to Phytotoxicity and Seed-Corn Maggot Control," J. Econ. Entomol. 48(5):538-543 (1955).

<2171>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
CHEMICAL COMMON NAME: Benzene hexachloride
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.25 oz/bushel
APPLICATION METHODS: Seed treatment; WP formulations
EXPERIMENTAL CONDITIONS: Field study; slurry treatments of seed; plot--18-ft row with 100 seeds; 8 replications; 19-month old seeds
EFFECTS: No significant effect on mean number of plants emerged or mean emergence period
COMMENTS: Benzene hexachloride designated as benzahex (75 % gamma isomer)
REFERENCE: Starks, K.J. and J.H. Lilly, "Insecticide Seed Treatment of Soybeans in Relation to Phytotoxicity and Seed-Corn Maggot Control," J. Econ. Entomol. 48(5):538-543 (1955).

<2172>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.01, 0.1, 1.0, and 10.0 uM
APPLICATION METHODS: 2 weeks growth in test solution
EXPERIMENTAL CONDITIONS: Technical benzene hexachloride dissolved in 5 ml acetone; after 24 hr aeration to remove acetone, seedlings transplanted to test solution; 2 weeks in growth chamber at 30 C day and 20 C night with 16-hr photoperiod; solutions kept at pH 5
EFFECTS: Weight of plant parts (roots, stems, and blades) drastically reduced at 10 uM, weight increased at 0.01 and 0.1 uM compared with control; photosynthesis reduced only at 10 uM, respiration rates decreased as concentration increased; chlorophyll a and b concentrations slightly decreased at 1.0 uM, significantly decreased at 10.0 uM; reducing sugars, sucrose, and starch levels slightly increased at 0.01 and 0.1 uM, slightly decreased at 1.0 and 10.0 uM
COMMENTS: Mode of action associated with chromosomal and physiological processes
REFERENCE: Salazar, A.G. and G.M. Paulsen, "Some Physiological Responses of SORGHUM BICOLOR to Benzene Hexachloride," J. Agric. Food. Chem. 19(5):1005-1007 (1971).

<2173>
<2173>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
CHEMICAL COMMON NAME: Lindane
PLANT: Bean, bush (PHASEOLUS HUMILIS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 0.4 oz/cwt of seed
APPLICATION METHODS: Slurry treatments--seeds placed in insecticide mixture and shaken 3 to 10 min
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; Lima silt loam; May 24 planting
EFFECTS: No significant phytotoxicity
COMMENTS: Main study emphasis was seedcorn maggot control
REFERENCE: Eckenrode, C.J., N.L. Gauthier, D. Danielson, and D.R. Webb, "Seedcorn Maggot: Seed Treatments and Granule Furrow Applications for Protecting Beans and Corn," J. Econ. Entomol. 66(5):1191-1194 (1973).

<2174>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
CHEMICAL COMMON NAME: Benzene hexachloride
PLANT: Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 10, 50, and 100 ppm
APPLICATION METHODS: Soil application; 50% WP formulation
EXPERIMENTAL CONDITIONS: Pot experiments; black clay loam (pH, 7.9; organic carbon, 0.92%) and red sandy loam (pH, 6.8; organic carbon, 0.73%); plants analyzed after 30 days; summer and winter seasons
EFFECTS: Black clay loam--no inhibitory effect on growth or nodulation in summer or winter at any rate; red sandy loam--marked growth reduction at all rates, more pronounced at 50 and 100 ppm, nodules not formed at 50 and 100 ppm, roots and shoots stunted, effects same winter and summer except 10 ppm in winter inhibited nodule formation
COMMENTS: Phytoxic action varied with soil type; toxic effects possibly due to disfunction of phytohormone metabolism
REFERENCE: Murthy, N.B.K. and K. Raghu, "The Effect of Benzene Hexachloride on the Growth and Nodulation of Peanut Plants," Bull. Environ. Contam. Toxicol. 16(1):122-126 (1976).

<2175>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
CHEMICAL COMMON NAME: BHC
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.9 lb/A
APPLICATION METHODS: Postemergence spray for insect control; 10 gal/A; 3X applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate foliage injury but no adverse effect on soybean yield
COMMENTS: Spray injury generally more severe with accumulative applications; most severe with oil soluble formulation of DDT for all dates and accumulative applications, and for dilan and BHC with single applications
REFERENCE: Probst, A. H. and R. T. Everly, "Effect of Foliage Insecticides on Growth, Yield and Chemical Composition of Soybeans," Agron. J. 49:577-581 (1957).

<2176>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
CHEMICAL COMMON NAME: Lindane
PLANT: Cabbage, Chinese (BRASSICA PEKINENSIS)
EXPERIMENTAL DOSE: 0.4 kg/ha
APPLICATION METHODS: Insecticidal spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; pollen collected at various times after application; evaluation time--6 hr to 21 da
EFFECTS: Significant pollen sterility for 1 to 14 days
COMMENTS: Most insecticides affected pollen viability only for first 4-5 days, except a few which affected it even up to 12 or 15 days
REFERENCE: Lal, O.P., "Insecticidal Sprayings Causing Pollen Sterility in Chinese Cabbage," Act. Agron. Acad. Scient. Hungar. 24:145-147 (1975).

<2177>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
CHEMICAL COMMON NAME: Lindane
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 5, 10, 20, 30, 40, and 50 ppm
APPLICATION METHODS: Pesticide dissolved in 25 ml acetone and diluted in water to give 5 ppm in 10 kg soil portion--treatment to give desired concentration
EXPERIMENTAL CONDITIONS: Greenhouse and laboratory study; 3 seed lots--high, medium, and low vigor; 200 seeds of each species of each vigor level planted in soil containing pesticide in 4 replicates; seedling emergence, height, and dry weight recorded; low temperature study in laboratory
EFFECTS: Pesticide residues alone, no significant effects; pesticide residue in combination with reduced vigor seeds resulted in reduced seedling height, dry weight, and germination energy; low temperatures also influence growth--50 ppm pesticide with low temperatures (13 C) caused 34 to 41% seedling reduction in low vigor cotton seeds, less in wheat seeds
COMMENTS: Reduction in seedling characteristics linearly related to increasing pesticide concentration and decreasing seed vigor; seed vigor reduction achieved by heating at 40 C; seed vigor is very important determining growth factor; different kinds of seeds respond differently
REFERENCE: Rajanna, B. and A.A. de la Cruz, "Stand Establishment and Early Growth of Field Crops as Influenced by Seed Vigor and Pesticide Residues," Seed. Sci. Technol. 5:71-85 (1977).

<2178>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
CHEMICAL COMMON NAME: BHC
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 1.7, 3.4, and 6.8%
APPLICATION METHODS: Dust at 20 kg/ha to 42-day old crop
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: Severe at all rates; 100% of leaves affected at all rates and observation times except 1.7% at 24 hr (75% of leaves affected)
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadvan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<2179>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
CHEMICAL COMMON NAME: Lindane
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1%
APPLICATION METHODS: Dust; 30 lb/A
EXPERIMENTAL CONDITIONS: Field study; 4 or 8 applications beginning with plant emergence
EFFECTS: No adverse effect
COMMENTS: Four applications of dusts of lindane, rotenone, methoxychlor, nicotine, calcium arsenate-tale, calcium arsenate-COCS, or COCS-talc neutral in effect on cucumber; four applications of dusts of DDT caused severe stunting of vines and markedly reduced yields
REFERENCE: Harcourt, D.G. and L.M. Cass, "Toxicities of Various Insecticides to Cucumber," Cand. J. Agr. Sci. 35:19-26 (1955).

<2180>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
CHEMICAL COMMON NAME: BHC
PLANT: Pine, Monterey (PINUS RADIATA)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Addition to soil in which pine seedlings were grown
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Morphological changes in roots and mycorrhizae
COMMENTS: Internal alterations of mycorrhizae under influence of eradicants characterized by irregularities in shape of fungal mantle, restricted penetration of mycelia, and reduced development of Hartig net; external modifications of short roots suggested that biocides cause radical changes in exudates of rhizospheric organisms
REFERENCE: Wilde, S.A. and D.J. Persidsky, "Effect of Biocides on the Development of Ectotrophic Mycorrhizae in Monterey Pine Seedlings," Proc. Soil Sci. Soc. 20:107-110 (1956).

<2181>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
CHEMICAL COMMON NAME: Lindane
PLANT: Cane (DRACAENA FRAGRANS)
EXPERIMENTAL DOSE: 0.5 and 2.0% solution
APPLICATION METHODS: 25% WP formulation
EXPERIMENTAL CONDITIONS: Infested cane immersed 15 min; each treatment replicated 5 times
EFFECTS: No phytotoxicity
COMMENTS: Test compound applied for scolytid beetle control -- satisfactory control with 0.5% solutions
REFERENCE: Hamlen, R.A. and R.E. Woodruff, "Scolytid Beetle Control in Cane of DRACAENA FRAGRANS, 'Massangeana'," J. Econ. Entomol. 68(2):231-232 (1975).

<2182>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
CHEMICAL COMMON NAME: Lindane
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 12.5, 50.0, and 100.0 ppm
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Arredondo loamy fine sand; pot culture
EFFECTS: No adverse effect on germination but reduced root or shoot growth at high rates
COMMENTS: BHC decreased germination; all other insecticides increased germination or had no effect; root and top weights decreased by chlordane, lindane, aldrin, dieldrin, TDE, DDT and BHC; top weights reduced by methoxychlor; heptachlor and toxaphene had no effect on growth
REFERENCE: Eno, C.F. and P.H. Everett, "Effects of Soil Applications of 10 Chlorinated Hydrocarbon Insecticides on Soil Microorganisms and the Growth of Stringless Black Valentine Beans," Soil Sci. Soc. Am. Proc. 22:235-238 (1958).

<2183>
<2183>
CHEMICAL NAME: Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
CHEMICAL COMMON NAME: BHC
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 12.5, 50.0, and 100.0 ppm
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Arredondo loamy fine sand; pot culture
EFFECTS: Reduced germination and growth at high rate
COMMENTS: BHC decreased germination; all other insecticides increased germination or had no effect; root and top weights decreased by chlordane, lindane, aldrin, dieldrin, TDE, DDT and BHC; top weights reduced by methoxychlor; heptachlor and toxaphene had no effect on growth
REFERENCE: Eno, C.F. and P.H. Everett, "Effects of Soil Applications of 10 Chlorinated Hydrocarbon Insecticides on Soil Microorganisms and the Growth of Stringless Black Valentine Beans," Soil Sci. Soc. Am. Proc. 22:235-238 (1958).

<2184>
CHEMICAL NAME: Cyclohexanol, 1-ethynyl-
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Boys-and-girls (MERCURIALIS ANNUA); Millet, Japanese (ECHINOCHLOA CRUSGALLI); Oat, wild (AVENA FATUA); Morningglory (IPOMOEA sp.); Johnson grass (SORGHUM HALEPENSE); Mustard (BRASSICA sp.); Corn (ZEA MAYS); Beet, sugar (BETA VULGARIS); Signalgrass, broad-leaf (BRACHIARIA PLATYPHYLLA); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 5.0 and 20.0 lb/A
APPLICATION METHODS: Foliar spray and soil addition
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; persistance measured by planting at 3-wk intervals
EFFECTS: Effective control of weeds and severe damage to crop plants; susceptible species affected up to 27 wk
COMMENTS: Activity pattern summarized as follows: extremely active when used in pre-emergence applications, more active on broad-leaved species than on grasses, almost completely inactive when used in post-emergence foliage applications, very effective when applied to the root zone of growing planta at all stages of development, and moderately persistent in the soil
REFERENCE: Leasure, J.K. and M.J. Josephs, "Acetylenic Derivatives as Herbicides," Weeds 9(1):103-105 (1961).

<2185>
CHEMICAL NAME: Cyclohexanone
CHEMICAL COMMON NAME: Cyclohexanone
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 0.1 to 2.5%
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: No adverse effect
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:78-83 (1962).

<2186>
CHEMICAL NAME: Cyclohexene, ethenyl-
CHEMICAL COMMON NAME: Vinylcyclohexene
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) for bean at 34.3x10(-5)M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<2187>
CHEMICAL NAME: Cyclonona[1,2-c:5,6-c']difuran-1,3,6,8(4H)-tetrone,10-ethyl-5,9,10,11-tetrahydro-4-propyl-1H-, [4S-(4R*,10S*)]-
CHEMICAL COMMON NAME: Byssochlamic acid
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Growth reduction of wheat but no blockage of GA-stimulated pea growth
COMMENTS: Of 524 compounds examined, 71 were found highly active and a further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<2188>
CHEMICAL NAME: Cyclononal[1,2-c:5,6-c'] difuran-1,3,6,8(4H)-tetrone, 10-[(3,6-dihydro-6-oxo-2H-pyran-2-yl) hydroxymethyl]-5,9,10,11-tetrahydro-4-hydroxy-5(1-hydroxyheptyl)-, [4R*,5S*(R*), 10S*(S*,S*)]-1H-
CHEMICAL COMMON NAME: Rubratoxin B
PLANT: Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 0.1 to 1000 micro g/ml
APPLICATION METHODS: Immersion of root tips in test solutions for 30 hr
EXPERIMENTAL CONDITIONS: Laboratory study; germinating bulbs soaked 8 days then treated
EFFECTS: Reduced mitotic index especially in anaphase
COMMENTS: Most striking damage was reduction of mitotic index and metaphase arrest by all toxins; appearance of nuclei with two nucleoli as well as vacuolization of the cytoplasm under influence especially of diacetoxyscirpenol which proved to be most active toxin
REFERENCE: Reiss, J., "Mycotoxin Poisoning of ALLIUM CEPA Root Tips II. Reduction of Mitotic Index and Formation of Chromosomal Aberrations and Cytological Abnormalities by Patulin, Rubratoxin B and Diacetoxyscirpenol," Cytologia 40:703-708 (1975).

<2189>
CHEMICAL NAME: Cyclopent(F)oxacyclotridecin-4-one, 1,6,7,8,9,11a,12,13,14,14a-decahydro-1, 13-dihydroxy-6-methyl, 4H-,[1S-(1R*,2E,6R*,10E,11aR*,13R*,14aS*)]-
CHEMICAL COMMON NAME: Cyanein
PLANT: Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 100 micro g/ml, 1% ethyl alcohol
APPLICATION METHODS: Immersion of onion roots
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--24 and 48 hr
EFFECTS: Inhibition of root growth
COMMENTS: Cytostatic property demonstrated
REFERENCE: Betina, V. and P. Nemec, "Growth Inhibition of ALLIUM CEPA Roots by the Antibiotic Cyanein," Kurse Orig. 50:696 (1963).

<2190>
CHEMICAL NAME: Cyclopent-2-en-1-olacetate, methyl-2-pentyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 55; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2191>
CHEMICAL NAME: Cyclopent-2-en-1-one, 2-octyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 75; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2192>
CHEMICAL NAME: Cyclopent-2-en-1-one, 2-octyl-3-methyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 73; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2193>
<2193>
CHEMICAL NAME: Cyclopent-2-en-1-one, 2-pentyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 65; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2194>
CHEMICAL NAME: Cyclopent-4-en-1-one, 2-pentyl-2-carbethoxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 56; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2195>
CHEMICAL NAME: Cyclopent-5-enyl-1-acetate, methyl-2-oxo-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X(radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 95; percent germination, 10
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2196>
CHEMICAL NAME: Cyclopentan-1-one-2-carboxylate, ethyl-2-(carbethoxyethyl)-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 23; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2197>
CHEMICAL NAME: Cyclopentan-1-one, 2-(2'-pentynyl)-2-carbethoxy-
PLANT: Cucumber (CUCUMIS SATIVUS); Barley (HORDEUM VULGARE); Bean, bush (PHASEOLUS HUMILIS); Tomato (LYCOPERSICON ESCULENTUM); Oat (AVENA SATIVA); Wheat (TRITICUM VULGARE); Coleus (COLEUS BLUMEI)
EXPERIMENTAL DOSE: 1x10(-5), 5x10(-5), 1x10(-4), 5x10(-4), 1x10(-3), 5x10(-3), and 1x10(-2)M
APPLICATION METHODS: Root growth tests--96-hr treatments at 25 C; morphological studies--test compound added to soil in 25 ml aqueous solution (tomato plants when tested received 50 ml)
EXPERIMENTAL CONDITIONS: Root growth tests--inhibition of cucumber roots and effect on dry weight of barley roots determined; morphological tests--plants grown in 75 g vermiculite in plastic pots, observations on bean, oat, barley, and wheat
EFFECTS: Root growth--cuumber root inhibited 50% at 1x10(-3)M and about 100% at 5x10(-5)M, dry weight of barley root decreased about 65% at 1x10(-4)M and about 95% at 1x10(-5)M; morphological changes--1x10(-2)M caused almost complete inhibition of bean internodal elongation and 5x10(-2)M caused bean death, tomato foliage damage (reduction in leaflets per leaf, partial cupping of leaflets, etc.) at 1x10(-2)M that persisted 6 months after treatment, 1x10-2(M) increased fillering in barley, oats, and wheat and caused cupping of coleus leaves
COMMENTS: Barley weight study--essentially a study of conversion of endosperm to root tissue by young seedlings
REFERENCE: Klingensmith, M.J., "The Effect of Certain Benzazole Compounds on Plant Growth and Development," Am. J. Bot. 48:40-45 (1961).

<2198>
CHEMICAL NAME: Cyclopentan-1-one, 2-butyl-2-carbethoxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 15; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2199>
CHEMICAL NAME: Cyclopentan-1-one, 2-carbethoxy-2-pentyl-4-dimethylmalonyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 46; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2200>
CHEMICAL NAME: Cyclopentan-1-one, 2-heptyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 70; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2201>
CHEMICAL NAME: Cyclopentan-1-one, 2-heptyl-2-carbethoxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 60; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2202>
CHEMICAL NAME: Cyclopentan-1-one, 2-methyl-2-carbethoxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 89; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2203>
CHEMICAL NAME: Cyclopentan-1-one, 2-methyl-3-dimethylmalonyl
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 42; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2204>
<2204>
CHEMICAL NAME: Cyclopentan-1-one, 2-octyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 66; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2205>
CHEMICAL NAME: Cyclopentan-1-one, 2-octyl-2-carbethoxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 53; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2206>
CHEMICAL NAME: Cyclopentan-1-one, 2-octyl-3-dimethylmalonyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 65; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2207>
CHEMICAL NAME: Cyclopentan-1-one, 2-octyl-3-methyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 57; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2208>
CHEMICAL NAME: Cyclopentan-1-one, 2-pentyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 66; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2209>
CHEMICAL NAME: Cyclopentan-1-one, 2-pentyl-2-carbethoxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 61; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2210>
CHEMICAL NAME: Cyclopentan-1-one, 2-pentyl-3-methyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 47; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2211>
CHEMICAL NAME: Cyclopentan-1-one, 2-pentynyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 65; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2212>
CHEMICAL NAME: Cyclopentane
CHEMICAL COMMON NAME: Cyclopentane
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Severe damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2213>
CHEMICAL NAME: Cyclopentane, (1-methylethyl)-
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Severe damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2214>
CHEMICAL NAME: Cyclopentanone, hexachloro-
CHEMICAL COMMON NAME: Hexachlorocyclopentanone
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<2215>
<2215>
CHEMICAL NAME: Cyclopentapyrimidine-2,4(3H,5H)-dione, 3-cyclohexyl-6,7-dihydro-1H-
CHEMICAL COMMON NAME: Lenacil
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS) ; Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Crabgrass, large (DIGITARIA SANGUINALIS); Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Preemergence application with an Oxford Precision Sprayer at a rate of 280 l./ha and at 2 kg/cm2 pressure
EXPERIMENTAL CONDITIONS: Sandy loam soil; spinach plants 10 cm apart in rows 1 m apart; plot -- 3 rows 3 m long; 4 replications of each treatment; weeds per 930 cm were counted; plants harvested from center of each plot 37 days after emergence
EFFECTS: Excellent control of lamb's-quarters, shepherd's-purse and redroot pigweed; no effect on spinach yields; significant increase in spinach nitrate of blades and petioles; total nitrogen increased in spinach petioles
COMMENTS: Increase in plant nitrate can result from soil or lowered nitrate reductase activity; authors think that decrease in some phase of nitrate reduction by herbicide action is responsible for nitrate accumulation
REFERENCE: Cantliffe, D.J. and S.C. Phatak, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Spinach," Hortscience 9(5): 470-472 (1974).

<2216>
CHEMICAL NAME: Cyclopentapyrimidine-2,4(3H,5H)-dione, 3-cyclohexyl-6,7-dihydro-1H-
CHEMICAL COMMON NAME: Lenacil
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect noted
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2217>
CHEMICAL NAME: Cyclopentapyrimidine-2,4(3H,5H)-dione, 3-cyclohexyl-6,7-dihydro-1H-
CHEMICAL COMMON NAME: Lenacil
PLANT: Beet, sugar (BETA VULGARIS); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 0.75 to 1.87 lb/A
APPLICATION METHODS: Preemergence spray; 20 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Newport type; time period--1970 to 1972
EFFECTS: Moderate to effective control of weeds with slight initial vigor reduction of sugar beet but no adverse effect on yield
COMMENTS: Pyrazone and lenacil caused temporary loss of vigour in beet seedlings, did not reduce seedling number or affect final yield; margin of safety with these materials not large, dosage rates 25 percent in excess of the recommended rate tolerated even in two seasons when very wet weather followed herbicide application; both materials gave good weed control in wet spring and were less active in a dry spring; in dry conditions, lenacil appeared to retain more activity than pyrazone
REFERENCE: Short, J.L., "The Use of Sugar Beet Herbicides on Sandy Soils," Proc. 11th. British Weed Cont. Conf. 2:499-504 (1972).

<2218>
CHEMICAL NAME: Cyclopentapyrimidine-2,4(3H,5H)-dione, 3-cyclohexyl-6,7-dihydro-1H-
CHEMICAL COMMON NAME: Lenacil
PLANT: Plants; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 0.8 and 2.4 kg/ha
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 sites in Romania; time period--1972 and 1973
EFFECTS: Varied weed control (moderate to effective) with no adverse effect on sugar beet yield
COMMENTS: Results obtained from herbicides used alone unsatisfactory with many species uncontrolled; mixture of herbicides, or sequential treatments required for satisfactory weed control; best results obtained using ethofumesate associated with lenacil or phenmedipham
REFERENCE: Sarpe, N., O. Segarceanu, L. Ciorlaus, I. Popovici, I. Clotan, and C. Nagy, "The Efficiency of Herbicides Based on Pyrazone, Ethofumesate, Lenacil and Phenmedipha, Used Alone or in Combination, in Sugar Beet Grown Under Romanian Conditions," Proc. 12th. Br. Weed Cont. Conf. 2:477-483 (1974).

<2219>
CHEMICAL NAME: Cyclopentapyrimidine-2,4(3H,5H)-dione, 3-cyclohexyl-6,7-dihydro-1H-
CHEMICAL COMMON NAME: Lenacil
PLANT: Broadleaf weeds; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Pre-plant incorporated, preemergence, or postemergence sprays; 280 l./ha at 2 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1972 and 1973
EFFECTS: Effective weed control but reduced yield of beet
COMMENTS: Broadleaf weed control achieved in table beets with cycloate, CNP, pebulate, lenacil, pyrazon, IMC 3950, TCA + pyrazon, and pebulate followed by pyrazone; fair weed control achieved with EPTC, propachlor, and solubor; poor weed control obtained from CDEC, chlorpropham, pyrazon, and TCA; yields expressed as $/ha or tons/ha reduced by chlorpropham, lenacil, CNP, and TCA
REFERENCE: Phatak, S.C. and D.J. Cantliffe, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Table Beets," Hortsci. 10(3):271-273 (1975).

<2220>
CHEMICAL NAME: Cyclopentene, octachloro-
CHEMICAL COMMON NAME: Octachlorocyclopentene
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: Moderate initial control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<2221>
CHEMICAL NAME: Cyclopentyl-1-acetate, methyl-2-oxo-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 98; percent germination, 70
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<2222>
CHEMICAL NAME: Cyclopropanecarboxamide, N-(3,4-dichlorophenyl)-
CHEMICAL COMMON NAME: Cypromid
PLANT: Corn (ZEA MAYS); Chickweed, common (STELLARIA MEDIA); Speedwell (VERONICA sp.); Knotweed (POLYGONUM AVICULARE); Fool's parsley (AETHUSA CYNAPIUM)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Postemergence application with Oxford Precision Sprayer at 2.11 kg/cm(2) pressure and 2.25 l./ha volume
EXPERIMENTAL CONDITIONS: Maize sown in plots of 3 rows, 3.7 m long and 61 cm apart; Oxford clay soil; handweeded controls; weeds assessed 3 weeks after foliar treatment
EFFECTS: 1.12 kg/ha gave 86% chickweed, 100% speedwell, and 53% knotweed control, 2.24 kg/ha gave 100% chickweed and speedwell control, and 93% knotweed control; both rates gave insignificant fool's-parsley control; significant maize yield reduction at 2.24 kg/ha
COMMENTS: Results also reported of effectiveness of some herbicide combinations
REFERENCE: Ludwig, J.W., "The Use of a Low Dose of Atrazine Alone and in Mixtures with Other Herbicides in the Maize Crop," Weed Res. 13:12-18 (1973).

<2223>
CHEMICAL NAME: Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methyl-1-propenyl)-, [5-(phenylmethyl)-3-furanyl]methyl ester
CHEMICAL COMMON NAME: Resmethrin
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.25, 0.5, and 1.0 aihg
APPLICATION METHODS: 3 applications (0.5, 0.25, and 1.0 aihg), 7 days apart with hand sprayer; 10% WP formulation
EXPERIMENTAL CONDITIONS: Cultivars--'deep snow pink', 'marguerita', 'neptune', 'nob hill', 'orange bowl', 'snow ridge', 'white Anne', and 'yellow Delaware', initial application August 25; injury recorded from highest rate applied
EFFECTS: No foliage injury; moderate flower injury to 'deep snow pink' and 'orange bowl'; minor flower injury to 'white Anne', 'neptune', and 'marguerita'
COMMENTS: Trade designation, SBP 1382
REFERENCE: Poe, S.L., "Evaluations of Pesticides for Phytotoxicity on Chrysanthemum Flowers," Proc. Fl. State Hortic. Soc. 83:469-471 (1970).

<2224>
CHEMICAL NAME: Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methyl-1-propenyl)-, [5-(phenylmethyl)-3-furanyl]methyl ester
CHEMICAL COMMON NAME: SBP-1382
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Firethorn (PYRACANTHA COCCINEA)
EXPERIMENTAL DOSE: 0.25%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Chlorosis and leaf abscission of chrysanthemum with no adverse effect on firethorn
COMMENTS: No phytotoxicity observed on PYRACANTHA, but some chrysanthemum leaves yellowed and dropped after treatment; not all treated plants showed symptoms
REFERENCE: Ludlam, K.W., R.A. Berry, and S.R. Joseph, "Evaluation of SBP-1382 Aqueous Pressurized Spray and Aerosol Formulation," Proc. N.J. Mosquito Exterm. Assoc. 59:56-61 (1972).

<2225>
<2225>
CHEMICAL NAME: Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methyl-1-propenyl)-, [5-(phenylmethyl)-3-furanyl]methyl ester
CHEMICAL COMMON NAME: Resmethrin
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Dracena (DRACAENA SANDERIANA); Prayer plant (MARANTA LEUCONEURA); Sword-fern (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
EXPERIMENTAL DOSE: 0.25 and 0.5 lb/100 gal
APPLICATION METHODS: Formulation--7.1% EC at 2 and 4 quarts respectively; 4 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume equivalent); Plyac (spreader-sticker) added to controls and treatments at rate of 2 oz/100 gal water; sprays applied prior to 10:00 a.m.; 5 tests from May to November; temperature--83 to 98 F (day) and 56 to 78 F (night); greenhouse conditions
EFFECTS: B. ACTINOPHYLLA--moderate injury at 0.25 lb and severe injury at 0.5 lb (both injuries were ring-like depression in upper leaf surface beneath residue); N. EXALTATA--no injury at 0.25 lb, slight injury at 0.5 lb (marginal chlorosis and necrosis); S. AUREUS--no injury at 0.25 lb, moderate injury at 0.5 lb (ring-like depression in upper leaf surface beneath residue); no injury to other plants
COMMENTS: Experimental concentrations--recommended and twice the recommended rate
REFERENCE: Hamlen, R.A. and R.W. Henley, "Phytotoxicity to Tropical Foliage Plants of Repeated Insecticide and Miticide Applications Under Fiberglass-Covered Greenhouse Conditions," Proc. Fla. State Hort. Soc. 89:336-338 (1976).

<2226>
CHEMICAL NAME: Cysteine
CHEMICAL COMMON NAME: Cysteine
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 to 10.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; pea leaf sections; radiotracer studies of alkane synthesis
EFFECTS: Did not inhibited alkane synthesis
COMMENTS: Dithioerythritol, dithiothreitol, and mercaptoethanol (but not glutathione or cysteine) specifically inhibited alkane biosynthesis in young pea leaf tissue, and at the same time elongated chains accumulate in wax ester and fatty aldehyde fractions; inhibition of C(31) alkane synthesis by DTE resulted in accumulation of C(32)
REFERENCE: Buckner, J.S. and P.E. Kolattukudy, "Specific Inhibition of Alkane Synthesis with Accumulation of Very Long Chain Compounds by Dithioerythritol, Dithiothreitol, and Mercaptoethanol in PISUM SATIVUM," Arch. Biochem. and Biophys. 156:34-45 (1973).

<2227>
CHEMICAL NAME: Decane
CHEMICAL COMMON NAME: N-decane
PLANT: Sunflower (HELIANTHUS ANNUUS); Carrot (DAUCUS CAROTA); Corn (ZEA MAYS); Spinach (SPINACIA OLERACEA); Parsnip (PASTINACA SATIVA); Hogweed (HERACLEUM SPHONDYLIUM); Allyssum, golden tuff (ALLYSSUM SAXATILE)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect
EFFECTS: Moderate leaf cell damage of sunflower and no damage to carrot and parsley leaf cells with slight damage to leaf cells of remaining test species
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2228>
CHEMICAL NAME: Decane
CHEMICAL COMMON NAME: Normal-decane
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: No toxicity to bean at saturation
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<2229>
CHEMICAL NAME: Dehydracetic acid
CHEMICAL COMMON NAME: Dehydracetic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2230>
CHEMICAL NAME: DH-34
CHEMICAL COMMON NAME: DH-34
PLANT: Tea (Theaceae family)
EXPERIMENTAL DOSE: 2, 4, and 6 pints/A; 3 and 9 pints/100 gal
APPLICATION METHODS: Treatments to established tea plants
EXPERIMENTAL CONDITIONS: Trial 1--2, 4, and 6 pints/A/application, 3 applications, 48 plants per plot, 3 yr old tea clones; trial 2--3 and 9 pints/100 gal, thin film painted on tea leaves; trial 4--2 and 6 pints/A, 1 tea plant per plot, weed control assessed
EFFECTS: Mild chlorosis to tea foliage; moderate weed control
REFERENCE: Hasselo, H.N. and S. Sandanam, "Chemical Weed Control in Tea," Tea Q. 36(1):22-32 (1965).

<2231>
CHEMICAL NAME: Diazenesulfonic acid, [4-(dimethylamino) phenyl], sodium salt
CHEMICAL COMMON NAME: Dexon
PLANT: Barley (HORDEUM VULGARE); Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.025%
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Reduced seed germination and seedling injury of barley and chromosome aberrations of barley and broad bean
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<2232>
CHEMICAL NAME: Dibenz[a,h]anthracene
PLANT: Kalanchoe (KALANCHOE DIAGREMONTIANA); (BRYOPHYLLUM CALYCINUM); (NICOTINIA GLAUCA); Sunflower (HELIANTHUS ANNUUS); Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.0 to 3.0% in hydrous lanolin
APPLICATION METHODS: Lanolin applied to decapitated plants or to injured (needle prick) stem soft tissue
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Varied cancerous growths induced in plants with carcinogenic agents or growth substances
COMMENTS: Scharlach red found active in some cases with KALANCHOE DAIGREMONTIANA; application to apical internode after decapitation produced overgrowths which resembled crown galls; other carcinogens like 1,2,5,6-dibenzanthracene, 3,4-benzpyrene, methylcholanthrene induced necrosis of treated zone; indoleacetic acid in lanolin on decapitated and injured stems induced root formation; stems cracked and small nodular masses formed; small overgrowths on decapitated kalanchoes present histological pictures identical with crown gall
REFERENCE: Levine, M., "Plant Responses to Carcinogenic Agents and Growth Substances: Their Relation to Crown Gall and Cancer," Bull. Torrey Bot. Club 67:199-226 (1940).

<2233>
CHEMICAL NAME: Dibenzo[b,e][1,4] dioxepin-7-carboxylic acid, 4-formyl-3,8-dihydrozy-1,6,9-trimethyl-11-oxo-11H-
CHEMICAL COMMON NAME: Virensic acid
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Growth reduction of wheat but no blockage of GA-stimulated pea growth
COMMENTS: Of 524 compounds examined, 71 were found highly active and further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<2234>
<2234>
CHEMICAL NAME: Dibenzofurandione, 2,6-diacetyl-7,9-dihydroxy-8,9b-dimethyl-1,3(2H,9bH)-
CHEMICAL COMMON NAME: Usnic acid
PLANT: Bean, mung (PHASEOLUS AUREUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 50 to 250 mg/l
APPLICATION METHODS: Seed germination
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--30 C; respirometric and biochemical evaluations
EFFECTS: Inhibited germination and seedling growth as well as respiration
COMMENTS: Usnic acid found to inhibit germination and seedling growth of mung beans and wheat; inhibited rate of respiration and activities of amylase, protease, phosphatase, and incorporation of leucine into protein
REFERENCE: Dalvi, R.R., B. Singh, and D.K. Salunkhe, "Physiological and Biochemical Investigations on the Phytotoxicity of Usnic Acid," Phyton 29(1/2):63-73 (1972).

<2235>
CHEMICAL NAME: Dibenzofuranone, 2,8-diacetyl-4a, 96-dihydro-1,7,9-trihydroxy-4a-methoxy-6,9b-dimethyl-3(4H)-, trans-(-)-
CHEMICAL COMMON NAME: Placodiolic acid
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Growth reduction of wheat but no blockage of GA-stimulated pea growth
COMMENTS: Of 524 compounds examined, 71 were found highly active and a further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<2236>
CHEMICAL NAME: Dibenzothiophene
CHEMICAL COMMON NAME: Dibenthiophene
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: No damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2237>
CHEMICAL NAME: Dibromothymoquinone
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 5X10(-7)M
APPLICATION METHODS: Test compound dissolved in dimethylformamide then added to reaction mixture containing isolated chloroplasts (mesophyll and bundle-sheath chloroplasts), plastocyanin (50 um) and ferricyanide
EXPERIMENTAL CONDITIONS: Photoreduction of ferricyanide and plastocyanin by mesophyll and bundle-sheath chloroplasts investigated; reduction measured with an Aminco-Chance dual wavelength spectrophotometer
EFFECTS: Mesophyll chloroplasts--maximum inhibition of ferricyanide and plastocyanin reduction at 5X10(-7)M, higher concentrations acted as electron shuttle increasing rate of reduction; bundle-sheath chlorolasts--little ferricyanide and plastocyanin inhibition at 5X10(-7)M, greater concentrations increased inhibition with no observed shuttle effect
COMMENTS: Presence of shuttle effect caused by test compound appears directly related to presence of proton pump in chloroplast preparations
REFERENCE: Bishop, D.G. and W.G. Nolar, "Inhibition by Dibromothymoquinone of Photosynthetic Electron Transfer in Chloroplasts of Differing Ultrastructure," Arch. Biochem. Biophys. 168:594-600 (1975).

<2238>
CHEMICAL NAME: Dicarbonic acid, diethyl ester
CHEMICAL COMMON NAME: Diethyl polycarbonate
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.1 to 0.6%
APPLICATION METHODS: Seed soak for 5 hr
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination, growth, mitosis, and irradiation studied
EFFECTS: At 0.5 and 0.6% concentrations, strong germination inhibition and significant reduction in growth; inhibition of mitosis at 0.6%; enhanced radiation-induced chromosome fragmentation
COMMENTS: With increasing concentration, an increasing fraction of seeds showed, complete inhibition of germination, surviving seedlings show practically no inhibition of growth rate; on cellular level, following effects observed: chromosome breaks (low frequency), no exchanges, cells with single-stranded chromosomes, haploid cells, aneuploid cells, tripolar spindles, and chromosome contraction
REFERENCE: Natarajan, A.T., I. Pedorcsak, and L. Ehrenberg, "Effects of Diethyl Pyrocarbonate on Barley Seeds," Exp. Cell Res. 42:617-624 (1966).

<2239>
CHEMICAL NAME: Dicarbonic acid, diethyl ester
CHEMICAL COMMON NAME: Diethyl pyrocarbonate
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.0023 to 0.037 M
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory and field studies; first cell division after treatment studied (laboratory); chlorophyll mutation rate determined in next generation (field)
EFFECTS: Inhibited activity of RNase and DNase, reduced survival to maturity, and slightly increased chromosomal aberrations
COMMENTS: Most biological effects of MMS was damage of gene material; DEP acted as antimetabolite not provoking mutation and chromosomal aberrations primarily; DEP inhibited enzymes, RNase, and DNase, without affecting nucleic acids
REFERENCE: Federosak, I. and L. Ehrenberg, "Effects of Diethyl Pyrocarbonate and Methyl Methanesulfonate on Nucleic Acids and Nucleases," Acta Chem. Scand. 20:107-112 (1966).

<2240>
CHEMICAL NAME: Diethylamine, N-nitroso-
PLANT: Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 1X10(-7) to 1X10(-1) M
APPLICATION METHODS: I--germinated seed planted and watered with test solutions; II--seed soaked for 12 to 36 hr then planted; III--seed germination in petri plates, 3 days then planted
EXPERIMENTAL CONDITIONS: Greenhouse and laboratory study; pot culture; temperatures--1 C to 30 C
EFFECTS: In I--stimulated growth at 10(-6) and 10(-7) M; in II--no apparent effect except at 10(-1) M, germination at 5X10(-3) M and higher concentrations
COMMENTS: Varying effects with growth stimulation at low concentrations and germination inhibition at high concentrations; results somewhat temperature dependent
REFERENCE: Supniewska, J.H. and B. Dohnal, "Biological Effect of N-nitrosodiethylamine on the Development of RAPHANUS SATIVUS L. var. RADICULA DC, cv. Saxa," Bull. L'Acad. Polon. des Sci. XVII:115-120 (1969).

<2241>
CHEMICAL NAME: Diethylamine, 2-methyl-3,6-dichlorobenzoic-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3)M; moderate control at 10(-4)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2242>
CHEMICAL NAME: Diluex A
CHEMICAL COMMON NAME: Diluex A
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 46.0 lb/A; dust
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Severe leaf damage
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:78-83 (1962).

<2243>
CHEMICAL NAME: Dimefuron
CHEMICAL COMMON NAME: Dimefuron
PLANT: Bluegrass, annual (POA ANNUA); Chickweed, common (STELLARIA MEDIA); Bird's-eye (VERONICA PERSICA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Pineappleweed (MATRICARIA MATRICARIOIDES); Pimpernel, common (ANAGALLIS ARVENSIS); Fumitory (FUMARIA OFFICINALIS); Plantain, broad-leaf (PLANTAGO MAJOR); Knotweed (POLYGONUM AVICULARE); Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.5 and 1.0 kg/ha; WP
APPLICATION METHODS: Preemergence and postemergence (early and late) spray; 500 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--calcareous loam; malathion spray for black-fly
EFFECTS: Moderate to effective control of most weeds at both rates; preemergence and early postemergence sprays more effective than late postemergence which also caused some bean leaf damage, but did not adversely affect field bean yield
COMMENTS: Pre-emergence applications of simazine and of dimefuron effectively controlled weeds; bean seed yields similar to regularly hand-weeded control; dinoseb-acetate and early, but not late, post-emergence applications of dimefuron controlled weeds satisfactorily; dimefuron potentially useful in spring-sown field beans because it can be applied pre- or early post-emergence without damaging crop
REFERENCE: Glasgow, J.L., J.W. Dicks, and D.R. Hodgson, "Competition by, and Chemical Control of, Natural Weed Populations in Spring-Sown Field Beans (VICIA FABA)," Ann. Appl. Biol. 84(2):259-269 (1976).

<2244>
<2244>
CHEMICAL NAME: Dimethylalkylamine, n,n-
CHEMICAL COMMON NAME: Endothall mono
PLANT: Pondweed, sago (POTOMOGETON PECTINATUS); Pondweed, curly-leaf (POTOMOGETON CRISPUS); Pondweed (POTOMOGETON PERFOLIATUS); Hornwort (CERATOPHYLLUM DEMERSUM); Water celery (VALISNERIA SPIRALIS); Linseed (LINUM USITATISSIMUM); Mustard (BRASSICA CAMPESTRIS); Gram (CICER ARIETINUM); Clover, Egyptian (TRIFOLIUM ALEXANDRINUM); Coriander (CORIANDRUM SATIVUM); Wheat (TRITICUM AESTIVUM); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 7 ppm
APPLICATION METHODS: Injection
EXPERIMENTAL CONDITIONS: Application in stagnant and flowing water, stagnant water--pH-7.6, air temp--21 C, water temp--18 C; flowing water--velocity 0.4 km/hr, pH-8.0; air temp--28 C; water temp--22 C; conductivity--0.3 mmhos/cm; evaluation time--one and 8 or 9 wk; treated water used to irrigate crop plots
EFFECTS: Effective control of water weeds with no adverse effect on crop plants
COMMENTS: Of 5 herbicidal treatments employed, chlorothiamid, endothall and 2,4-D killed all submerged water weeds; all crop plants resistant to herbides except gram (susceptible to endothall, dipot.) and rice (susceptible to diuron)
REFERENCE: Dutta, T.R., J. Prasad, and R.P. Singh, "Evaluation of Herbicides for Submerged Weeds in Chambal and Bhakra-Nangal Canal Systems," Indian J. Agric. Sci. 42(1):70-75 (1972).

<2245>
CHEMICAL NAME: Dimethylamine, 2-methoxy-3,5-dichlorobenzoic-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect on shoot emergence
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2246>
CHEMICAL NAME: Dimethylamine, 2-methyl-3,6-dichlorobenzoic-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3)M; moderate control at 10(-4)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2247>
CHEMICAL NAME: Dimethylamine, 2,5-dichlorobenzoic-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Moderate control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2248>
CHEMICAL NAME: Dimethylamine, 5-nitro-2,3,5-trichlorobenzoic-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, 10(-4)M, and 10(-5)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Nearly complete control of shoot emergence at 10(-2)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2249>
CHEMICAL NAME: Dipel
CHEMICAL COMMON NAME: Dipel
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Dracena (DRACAENA SANDERIANA); Prayer plant (MARANTA LEUCONEURA); Sword-fern (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
APPLICATION METHODS: Formulation--WP at 1 and 2 lb; 4 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume euivalent); Plyac (spreader-sticker) added to controls and treatments at rate of 2 oz/100 gal water; sprays applied prior to 10:00 a.m.; 5 tests from May to November; temprature--83-98 F (day) and 56 to 78 F (night); greenhouse conditions
EFFECTS: No injury to any plant
COMMENTS: Biological insecticide formulated from bacterium BACILLUS THURINGIENSIS
REFERENCE: Hamlen, R.A. and R.W. Henley, "Phytotoxicity to Tropical Foliage Plants of Repeated Insecticide and Miticide Applications Under Fiberglass-Covered Greenhouse Conditions," Proc. Fla. State Hort. Soc. 89:336-338 (1976).

<2250>
CHEMICAL NAME: Diphosphoramide, octamethyl-
CHEMICAL COMMON NAME: Schradan
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Postemergence spray for insect control; 10 gal/A; 3X applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted
COMMENTS: Spray injury generally more severe with accumulative applications; most severe with oil soluble formulation of DDT for all dates and accumulative applications, and for dilan and BHC with single applications
REFERENCE: Probst, A. H. and R. T. Everly, "Effect of Foliage Insecticides on Growth, Yield and Chemical Composition of Soybeans," Agron. J. 49:577-581 (1957).

<2251>
CHEMICAL NAME: Diphosphoric acid, tetraethyl ester
CHEMICAL COMMON NAME: TEPP
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 150 to 4000 ppm
APPLICATION METHODS: Foliar spray to run-off; 2 ml Grasselli spreader
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; evaluation time--1 mo; sprayed at mature fruit stage
EFFECTS: Lethal at highest concentrations and inhibitory initially at lower with later growth stimulation
COMMENTS: Abnormal flowering symptoms first observed in carnation caused by aqueous spray applications of hexaethyl tetraphosphate containing active constituent tetraethyl pyrophosphate; stimulatory, inhibitive, and lethal responses of tomato to TEPP occurred; formative effects, even at extremely high soil levels of super-phosphate, not produced by inorganic phosphorus applications
REFERENCE: Hall, W.C., "Morphological and Physiological Responses of Carnation and Tomato to Organic Phosphorus Insecticides and Inorganic Soil Phosphorus," Plant Physiol. 26:502-524 (1951).

<2252>
CHEMICAL NAME: Diphosphoric acid, tetraethyl ester
CHEMICAL COMMON NAME: TEPP
PLANT: Antirrhinum; Aster (ASTER sp.); Begonia (BEGONIA sp.); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Cineraria; Coleus (COLEUS BLUMEI); Cyclamen; Dahlia; Geranium; Petunia (PETUNIA sp.); Polyanthus; St. Paulia; Violet (VIOLA sp.); Zinnia (ZINNIA sp.)
EXPERIMENTAL DOSE: 8 fl oz/100 gal
APPLICATION METHODS: Foliage sprays and root drenches at once, twice and five times normal dosages; equivalent amount of wetting agent added; normal active ingredient in spray and drench, 0.02%
EXPERIMENTAL CONDITIONS: Greenhouse and field study; treatments replicated 3 times; sprays applied til plants thoroughly drenched; root drenches applied at rate of 1/4 pint solution per 5-in. pot and 1/2 pint per 10-in. pot
EFFECTS: Antirrhinum--0.10% spray damaged flowers; aster--no damage; begonia--0.10% drench and 0.04% spray, leaf edge necrosis and some lamina scorch; chrysanthemum--0.10% spray and drench, leaf edge scorch; cineraria--0.02% spray and drench, leaf edge and lamina scorch; coleus--0.02% drench and 0.10% spray; speckle of leaf edge and lamina and patchy scorch with some interveinal discoloration; cyclamen--no damage; dahlia--no damage; geranium--0.04% drench and 0.10% spray, leaf edge scorch and chlorosis; petunia--no damage; polyanthus--0.10% spray and drench, leaf scorch and chlorosis; St. Paulia--no damage from spray, 0.10% drench caused severe lamina necrosis; violet--0.04% drench and 0.10% spray, necrotic patches on lamina and edge of leaves; zinnia--0.10% spray, slight epithelial bronzing
COMMENTS: Values under effects are minimum phytotoxic dosages
REFERENCE: Dennis, E.B. and C.A. Edwards, "Phytotoxicity of Insecticides and Acaricides II. Flowers and Ornamentals," Plant Pathol. 12:27-36 (1963).

<2253>
CHEMICAL NAME: Diphosphoric acid, tetraethyl ester
CHEMICAL COMMON NAME: TEPP
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Pea, sweet (PISUM SATIVUM); Bean, snap (PHASEOLUS VULGARIS); Cucumber (CUCUMIS SATIVUS); Lettuce (LACTUCA SATIVA); Beet (BETA sp.); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 8 fl oz/100 gal
APPLICATION METHODS: Postemergence spray, normal active ingredient 0.02%; once, twice and five times normal dosage applied; miscible formulation plus wetting agent
EXPERIMENTAL CONDITIONS: Tomato and cucumber grown in greenhouse; other crops grown in field; 3 replications
EFFECTS: Cucumber, tomato, and lettuce damaged at normal dosage, tomato severely injured; slight damage to

<2253>
<2253> CONT.
pea, fodder beet, and bean at 0.04% spray; 0.10% spray caused severe injury to all crops but cabbage
COMMENTS: Slight damage--mild scorch, leaf crinkle, edge curl, and scorch; severe damage--serious scorch, distortion, death of growing point
REFERENCE: Dennis, E.B. and C.A. Edwards,"Phytotoxicity of Insecticides and Acaricides," Plant Pathol. 10(2):54-60 (1961).

<2254>
CHEMICAL NAME: Diphosphoric acid, tetraethyl ester
CHEMICAL COMMON NAME: TEPP
PLANT: Amaryllis (AMARYLLIS sp.); Azalea (AZALEA sp.); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Strawberry (FRAGARIA sp.); Kalanchoe (KALANCHOE DIAGREMONTIANA); Tomato (LYCOPERSICON ESCULENTUM); Oxalis (OXALIS sp.); Smartweed, pale (POLYGONUM LAPATHIFOLIUM); Rose, wild (ROSA sp.); Chickweed, common (STELLARIA MEDIA); (STEVIA sp.); (TIGRIDIA sp.); Clover, alsike (TRIFOLIUM HYBRIDUM); Watercress (TROPAEOLUM HYBRIDUM); Begonia (BEGONIA SEMPERFLORENS); Rose mallow (HIBISCUS ROSA-SINENSIS); Lily, spider (HYMENOCOLLIS sp.); Passion flower (PASSIFLORA sp.); Moonflower (COLONYCTION sp.); Clematis (CLEMATIS sp.); Mint (MENTHA sp.); Petunia (PETUNIA sp.); Oak (QUERCUS sp.); Saxifrage (SAXIFRAGA sp.); (CAMELLIA sp.); (CITRUS sp.); (DAPHNE sp.); Orchid, O'Brienianum (EPIDENDRUM sp.); Holly (ILEX sp.); Daffodil (NARCISSUS sp.); (NEPHROLEPIS sp.); Violet, African (SAINTPAULA IONANTNA); Nightshade (SOLANUM sp.); Orchid, vanilla (VANILLA sp.)
EXPERIMENTAL DOSE: 22.5 ml/4250 cu ft (vapor); 25 to 500 mg/50 ml (solutions)
APPLICATION METHODS: Fumigation and addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Moderate to severe damage to a variety of test plants especially those in direct line with fumigation spray
COMMENTS: TEPP first injured leaves and caused epinastic responses; latter response assumed to be associated with decomposition product, ethylene gas; hexamethyl tetraphosphate, used in the same way, did not injure leaves or cause epinasty
REFERENCE: Zimmerman, P.W. and A. Hartzell, "Hexaethyl Tetraphosphate and Tetraethyl Pyrophosphate: I. Their Effects on Plants. II. Their Toxicities to Insects and Mites," Contrib. Boyce Thompson Inst. 15:11-19 (1947-1949).

<2255>
CHEMICAL NAME: dipropyl-, S-ethyl esterAcetamide, 2-chloro-N,N-di-2-propenyl-CDAA
CHEMICAL COMMON NAME: CDAA
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 2.0 to 16.0 lb/A
APPLICATION METHODS: Added to soil and mixed
EXPERIMENTAL CONDITIONS: Germination chamber; temperature--75 F (day) and 72 F night; paper carton culture; soil--Plainfield sand; evaluation time--up to 54 da
EFFECTS: Slightly stimulated germination and reduced seedling growth
COMMENTS: Seed germination influenced only very slightly, or not at all, by variety of soil-incorporated herbicides; in contrast, all but one of soil-incorporated herbicides caused seedling mortality and decreased dry-weight production of seedlings; greatest toxicity observed at highest dosages used; EPTC and CDAA at high dosages very toxic to tree seedlings, whereas DCPA showed no deleterious effects at any dosage
REFERENCE: Kozlowski, T.T. and J.H. Torrie, "Effect of Soil Incorporation of Herbicides on Seed Germination and Growth of Pine Seedlings," Soil Sci. 100(2):139-146 (1965).

<2256>
CHEMICAL NAME: Dipyrido[1,2-a:2',1'-c]pyrazinediium
CHEMICAL COMMON NAME: Diquat
PLANT: Capewood (ARCTOTHECA CALENDULA); Oat (AVENA SATIVA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.07 and 0.14 kg/ha
APPLICATION METHODS: Postemergence spray; 112 l./ha
EXPERIMENTAL CONDITIONS: Field study; time period-- 1966 to 1970; 5 locations in Australia
EFFECTS: Effective control of capeweed at 0.14 kg/ha with no adverse effect on crop yields
COMMENTS: Most satisfactory herbicides tested for control of capeweed were bromoxynil, linuron, diquat and prometryne; in one year tested, methabenzthiazuron effective
REFERENCE: Reeves, T.G. and J.M. Lumb, "Selective Chemical Control of Capeweed in Wheat," Aust. J. Exp. Agric. Anim. Husb. 12:60-64 (1972).

<2257>
CHEMICAL NAME: Dipyrido[1,2-a:2',1'-c]pyrazinediium
CHEMICAL COMMON NAME: Diquat
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3) M, 10(-4) M, 10(-5) M, and 10(-6) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-3) and 10(-4) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2258>
CHEMICAL NAME: Dipyrido[1,2-a:2',1'-c]pyrazinediium
CHEMICAL COMMON NAME: Diphenamid
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 3.36 and 6.72 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: In preplant applications, broadleaf weeds were only moderately controlled while grasses were completely controlled with slight phytoxicity to tomato but no reduction in yield
COMMENTS: Metribuzin, napropamide, and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<2259>
CHEMICAL NAME: Dipyrido[1,2-a:2',1'-c]pyrazinediium
CHEMICAL COMMON NAME: Diquat
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 1.0 to 2.5 ppmw
APPLICATION METHODS: Injected under surface of water by spray nozzle at 120 psi
EXPERIMENTAL CONDITIONS: Field study; naiads growing in 2 locations in FL; time period--1960 to 1962
EFFECTS: Effective control of naiad at all rates for up to 16 wk
COMMENTS: Most promising of 13 herbicides for control of southern naiad were acrolein, endothall, diquat, and paraquat; acrolein and endothall gave most rapid kill of southern naiad but retreatment necessary at end of 16 weeks
REFERENCE: Blackburn, R.D. and L.W. Weldon, "Control of Southern Naiad in Florida Drainage and Irrigation Channels," Weeds 12(4):295-298 (1964).

<2260>
CHEMICAL NAME: Dipyrido[1,2-a:2',1'-c]pyrazinediium
CHEMICAL COMMON NAME: Diquat
PLANT: Waterweed (ELODEA CANADENSIS); Naiad, Southern (NAJAS GUADALUPENSIS); Coontail (CERATOPHYLLUM DEMERSUM); Lettuce, water (PISTIA STRATIOTES); Hyacinth, water (EICHHORNIA HASTAEFOLIA); Salvinia (SALVINIA ROTUNDIFOLIA); Alligatorweed
EXPERIMENTAL DOSE: 1.0 to 10.0 ppm (submersed weeds); 1.0 to 10 lb/A (floating weeds); 5 and 20 lb/A (alligatorweed)
APPLICATION METHODS: Addition by syringe to water containing test species (submersed species) and spray (100 gal/A at 20 psi)
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--80F; light intensity--60 to 80 ft c; photoperiod--10 hr; evaluation time--2 to 8 wk with continuous and varied (0.5 to 336 hr) contact
EFFECTS: Moderate to effective control at all rates except 1 ppmw (submersed plants) for 4 to 8 wk in continuous exposure
COMMENTS: Among 75 herbicides evaluated on three species of submersed weeds only diquat, paraquat, endothal, and acrolein gave 85% or better control at 1 ppmw in still-water tests; only acrolein and endothal effective on submersed weeds at 1 ppmw in limited-exposure test; evaluation of 17 herbicides on three species of floating aquatic weeds indicated diquat effective
REFERENCE: Blackburn, R.D., "Evaluating Herbicides Against Aquatic Weeds," Weeds 11(1):21-24 (1963).

<2261>
CHEMICAL NAME: Dipyrido[1,2-a:2',1'-c]pyrazinediium
CHEMICAL COMMON NAME: Diquat
PLANT: Hyacinth, water (EICHHORNIA HASTAEFOLIA)
EXPERIMENTAL DOSE: 7.0 l./ha
APPLICATION METHODS: Addition to water
EXPERIMENTAL CONDITIONS: Field study; evaluation time--2 and 6 wk
EFFECTS: Effective control
COMMENTS: Complete control of water hyacinth obtained with diquat and paraquat with no further regeneration; partial control obtained with cyanazine and 2,4-D while TCA proved non-effective against water hyacinth
REFERENCE: Patro, G.K. and G.C. Tosh, "Studies on Control of Water Hyacinth (EICHHORNIA CRASSIPES) by Herbicides," Andhra Agric. J. 18(4):139-143 (1971).

<2262>
CHEMICAL NAME: Dipyrido[1,2-a:2',1'-c]pyrazinediium
CHEMICAL COMMON NAME: Diquat
PLANT: Waterweed (ELODEA CANADENSIS); Naiad, Southern (NAJAS GUADALUPENSIS); Coontail (CERATOPHYLLUM DEMERSUM); Lettuce, water (PISTIA STRATIOTES); Hyacinth, water (EICHHORNIA HASTAEFOLIA); Salvinia (SALVINIA ROTUNDIFOLIA); Alligatorweed
EXPERIMENTAL DOSE: 1.0 to 10.0 ppm (submersed weeds); 1.0 to 10 lb/A (floating weeds); 5 and 20 lb/A (alligatorweed)
APPLICATION METHODS: Addition by syringe to water containing test species (submersed species) and spray (100 gal/A at 20 psi)
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--80 F; light intensity--60 to 80 ft c; photoperiod--10 hr; evaluation time--2 to 8 wk with continuous and varied (0.5 to 336 hr) contact
EFFECTS: Moderate to effective control at all rates except 1 ppmw (submersed plants) for 4 to 8 wk in continuous exposure

<2262>
<2262> CONT.
COMMENTS: Among 75 herbicides evaluated on three species of submersed weeds only diquat, endothal, and acrolein gave 85% or better control at 1 ppmw in still-water tests; only acrolein and endothal effective on submersed weeds at 1 ppmw in limited-exposure test; evaluation of 17 herbicides on three species of floating aquatic weeds indicated diquat effective
REFERENCE: Blackburn, R.D., "Evaluating Herbicides Against Aquatic Weeds," Weeds 11(1):21-24 (1963).

<2263>
CHEMICAL NAME: Dipyrido[1,2-a:2',1'-c]pyrazinediium, 6,7-dihydro-, dibromide
CHEMICAL COMMON NAME: Diquat dibromide
PLANT: Barleygrass (HORDEUM LEPORINUM); Clover, subterranean (TRIFOLIUM SUBTERRANEUM); Ryegrass, wimmera (LOLIUM RIGIDUM)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Foliar spray; 80 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Reduced yield of barleygrass with increased yield of clover and ryegrass
COMMENTS: Subterranean clover much more susceptible than white clover to 2,2-DPA; in autumn, following treatment with 2,2-DPA, 16 clover seedlings per square link recorded; white clover more tolerant of 2,2-DPA although yields significantly reduced by 2 lb an acre
REFERENCE: Squires, V.R., "Herbicides for the Selective Control of Barley Grass in Irrigated Clover Pastures," Australian J. Exp. Ag. 3(8):35-38 (1963).

<2264>
CHEMICAL NAME: Dipyrido[1,2-a:2',1'-c]pyrazinediium1,4-Oxathiin-3-carboxamide, 5,6-dihydro-2-methyl-N-phenyl, 4-oxide
CHEMICAL COMMON NAME: F 831
PLANT: Barley (HORDEUM VULGARE); Bean, kidney (PHASEOLUS VULGARIS); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1 X 10(-5) M to 1 X 10(-3) M
APPLICATION METHODS: Addition to vermiculite in Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Greenhouse study; vermiculite
EFFECTS: Signficant growth reduction at 1 X 10(-3) and 1 X 10(-4) M
COMMENTS: Carboxin and its oxidized products not effective in inhibiting the growth or metabolic activities of the various non-target organisms or systems until concentrations of 10(-4) M or higher reached; target species strongly inhibited at 10(-6) M
REFERENCE: Mathre, D.E., "Effects of Oxathiin Systemic Fungicides on Various Biological Systems," Bull. Envir. Contam. Toxicol. 8(5):311-316 (1972).

<2265>
CHEMICAL NAME: Disiloxane, 1,3-bis(chloromethyl)-1,1,3,3-tetramethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effect
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<2266>
CHEMICAL NAME: Dithane
CHEMICAL COMMON NAME: Dithane
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Little or no adverse effect on germination or seedlings but some chromosome fragmentation
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<2267>
CHEMICAL NAME: DL-Alanine, N-benzoyl-N-(3,4-dichlorophenyl)-, ethyl ester
CHEMICAL COMMON NAME: Benzoylprop-ethyl
PLANT: Wheat (TRITICUM sp.); Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 1.8 kg/ha
APPLICATION METHODS: Postemergence spray at 220 to 316 l./ha water; 5 ml/l. of surfactant 'Teric GN9' or 7 ml/l. of surfactant 'Agral LW' added
EXPERIMENTAL CONDITIONS: Randomized block design with 4 replications; field studies; benzoylprop-ethyl used as standard
EFFECTS: Good wild oat control; wheat yields significantly increased over controls
REFERENCE: Logan, I.C., "Difenzoquat for Wild Oat Control in Cereals," Proc. N.Z. Weed Pest Control Conf. 28:181-184 (1975).

<2268>
CHEMICAL NAME: DL-Alanine, N-benzoyl-N-(3,4-dichlorophenyl)-, ethyl ester
CHEMICAL COMMON NAME: Benzoylprop-ethyl
PLANT: Oat, wild (AVENA LUDOVICIANA); Wheat (TRITICUM sp.)
EXPERIMENTAL DOSE: 1.4 kg/ha
APPLICATION METHODS: Postemergence spray in 600 l./ha water at 2 kg/cm(2); 20% EC formulation; very early, early, and normal application times
EXPERIMENTAL CONDITIONS: 2 x 2 m plots marked off in existing wheat crop; natural infestation of wild oat; randomized block design with 4 replicates; effect of varying application time studied
EFFECTS: 82.4, 86.8, 94.8% reduction in wild oat stems with very early, early, and normal application times, respectively; tarnsient traces of phytotoxicity with normal application time
REFERENCE: Catizone, P., "Trials on Wild Oat (AVENA LUDOVICIANA, DURIEU) Control in Winter Wheat Comparing New Herbicides," Proc. Brit. Weed Control Conf. 12:45-52 (1974).

<2269>
CHEMICAL NAME: DL-Alanine, N-benzoyl-N-(3,4-dichlorophenyl)-, ethyl ester
CHEMICAL COMMON NAME: Benzoylprop-ethyl
PLANT: Oat, wild (AVENA FATUA); Oat (AVENA SATIVA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Postemergence spray at 3.164 kg/cm(2) pressure and at low volume; early and late application to separate plots, 1 to 2 weeks apart
EXPERIMENTAL CONDITIONS: Trials conducted on commercial ryegrass fields; 3 x 10 m plots in 3 radomized blocks; 2 test sites
EFFECTS: Good A. FATUA control, excellent A. SATIVA control; control better with late application (April 30); no visible ryegrass injury
REFERENCE: Mead, H., B.L. Ross, and R.J. Finch, "Preliminary Investigations on the Control of Wild-Oat (AVENA FATUA L.) Cultivated Oak (AVENA SATIVA L.) and Blackgrass (ALOPECURUS MYOSUROIDES HUDS.) in Seed Crops of Various Varieties of Perennial and Italian Ryegrass," Proc. Brit. Weed Control Conf. 12(2):707-714 (1974).

<2270>
CHEMICAL NAME: DL-Alanine,N-benzoyl-N-(3-chloro-4-fluorophenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: Flamprop-isopropyl
PLANT: Oat, wild (AVENA FATUA); Oat (AVENA SATIVA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 0.99 kg/ha
APPLICATION METHODS: Postemergence spray at 3.164 kg/cm(2) pressure and at low volume; early and late application to separate plots, 1 to 2 weeks apart
EXPERIMENTAL CONDITIONS: Trials conducted on commercial ryegrass fields; 3 x 10 m plots in 3 randomized blocks; 2 test sites
EFFECTS: Moderate control of both oat species; no visible ryegrass injury
REFERENCE: Mead, H., B.L. Ross, and R.J. Finch, "Preliminary Investigations on the Control of Wild-Oat (AVENA FATUA L.) Cultivated Oak (AVENA SATIVA L.) and Blackgrass (ALOPECURUS MYOSUROIDES HUDS.) in Seed Crops of Various Varieties of Perennial and Italian Ryegrass," Proc. Brit. Weed Control Conf. 12(2):707-714 (1974).

<2271>
CHEMICAL NAME: DL-Phenylalanine, 4-[bis(2-chloroethyl)amino]-, monohydrochloride
CHEMICAL COMMON NAME: Sarcolysine
PLANT: Wheat, durum (TRITICUM DURUM); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.35 g/l.
APPLICATION METHODS: Seed treatment with 10 ml test solution
EXPERIMENTAL CONDITIONS: Seeds placed in petri dishes containing 10 ml test solution; dishes covered at room temperature for 4 days then germinated seeds counted; mortality compared to control reported; ploidy versus toxic effects monitored
EFFECTS: 43 and 5.5% mortality of T. DURUM and T. AESTIVUM, respectively
COMMENTS: T. DURUM, tetraploid; T. AESTIVUM, hexaploid; increase in ploidy accompanied by increased resistance towards cytotoxic action
REFERENCE: Badilescu, I., S. Botis-Simon, and Z. Simon, "Response of Some Seeds of Different Ploidies Towards Alkylating Agents and Some Common Phytotoxica," Rev. Roum. Biochim. 4(4):279-285 (1967).

<2272>
<2272>
CHEMICAL NAME: Dodecanamide, N-(2-methylpropyl)-
CHEMICAL COMMON NAME: Lauramide, N-butyl-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse phytotoxic effect
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<2273>
CHEMICAL NAME: Dodecane
CHEMICAL COMMON NAME: N-dodecane
PLANT: Sunflower (HELIANTHUS ANNUUS); Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect
EFFECTS: Slight injury of leaf cells of sunflower with no injury to carrot leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.)
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2274>
CHEMICAL NAME: Dodecanoic acid
CHEMICAL COMMON NAME: Lauric acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 3.2%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<2275>
CHEMICAL NAME: Dow Corning SZ 8-3063
CHEMICAL COMMON NAME: Dow Corning XZ-8-3063
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<2276>
CHEMICAL NAME: Dow Corning 471 fluid
CHEMICAL COMMON NAME: Dow Corning 471 Fluid
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<2277>
CHEMICAL NAME: Dowco 356
CHEMICAL COMMON NAME: Dowco-356
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 12 locations in IA
EFFECTS: Moderate weed control
COMMENTS: Preplant-incorporated treatments more consistent in grass and broadleaf weed control than preemergence treatments; preplant-incorporated herbicide butylate plus R-25788 and EPTC plus R-25788 and preplant or preemergence chemical such as alachlor and CGA-24705 provided good to excellent grass control but needed assistance of broadleaf controlling herbicides such as atrazine, cyanazine, and procyazine
REFERENCE: Studt, D.M. and V.M. Jennings, "Corn Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:146-150 (1975).

<2278>
CHEMICAL NAME: Dowco 356
CHEMICAL COMMON NAME: Dowco-356
PLANT: Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA LUTESCENS); Foxtail, green (SETARIA VIRIDIS); Sunflower (HELIANTHUS ANNUUS); Velvetleaf (ABUTILON THEOPHRASTI); Venice mallow (HIBISCUS TRIONUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed (AMARANTHUS sp.); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Preemergence treatments; 1.5 gal capacity plot sprayer regulated to apply 30 gal per acre
EXPERIMENTAL CONDITIONS: Test compound mixed with water to make 1 gal of spray solution; 3 replicates; randomized complete block design; 4 to 5 rows wide by 40 ft long; multiple test locations
EFFECTS: Soybean injury indicated but extent not reported; 69% grass control; 53% broadleaf weed control
COMMENTS: Foxtails--grasses; other weeds--broadleaf; combinations of herbicides also tested
REFERENCE: Seim, A.L. and V.M. Jennings, "Soybean Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:54-58 (1975).

<2279>
CHEMICAL NAME: DPX 2851
CHEMICAL COMMON NAME: DPX-2851
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Broadleaf weeds; Grasses; Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 2.4 and 4.8 kg/ha
APPLICATION METHODS: Preemergence spray; 80% WP formulation
EXPERIMENTAL CONDITIONS: Field studies; randomized block design with 4 replications
EFFECTS: Effective weed control; no indication of sugarcane injury
COMMENTS: Researchers note DPX 2851 withdrawn by manufacturers
REFERENCE: Iggo, G.A., "Results of Screening Pre-emergence Herbicides for Sugarcane," Proc. S. Afr. Sugar Technol. Assoc. 49:122-125(1975).

<2280>
CHEMICAL NAME: DPX-1108
CHEMICAL COMMON NAME: DPX-1108
PLANT: Ash, black (ALNUS GLUTINOSA); Ash, silver (BETULA PENDULA); Hornbeam (CARPINUS BETULUS); Beech (FAGUS SYLVATICA); Honeysuckle, fly (LANICERA XYLOSTEUM); Oak, English (QUERCUS ROBER); Alder-buckthorn (FRANGULA ALNUS); Blackberry (RUBUS FRUTICOSUS); Raspberry (RUBUS IDAEUS); Willow, goat (SALIX CAPREA); Elder, European (SAMBUCUS NIGRA); Elder (SAMBUCUS RACEMOSA); Ash, European mountain (SORBUS AUCUPARIA); Ash (FRAXINUS EXCELSIOR); Aspen (POPULUS TREMULA)
EXPERIMENTAL DOSE: 2.4 to 7.2 kg/ha
APPLICATION METHODS: Foliar spray; 200 and 500 l./ha
EXPERIMENTAL CONDITIONS: Field study; time period--1972 and 1973; evaluation period--one yr
EFFECTS: At 2.4 kg/ha, effective control of all brush-wood species except LONICERA (no effect) and slight to moderate control of RUBUS IDAEUS, SORBUS, FRAXINUS, POPULUS, and SABUCUS RACEMOSA
COMMENTS: At rates of around 2.4 kg/ha gave good control of a number of brushwood species in trials in West German forest areas
REFERENCE: Niehuss, M.H. and K.J. Roediger, "Ammonium Ethyl Carbamoylphosphonate, a New Plant Growth Regulator for the Control of Undesirable Brush-Wood Species," Proc. 12th. Br. Weed Cont. Conf. 3:1015-1022 (1974).

<2281>
CHEMICAL NAME: DPX-2645
CHEMICAL COMMON NAME: DPX-2645
PLANT: Broadleaf weeds; Grasses; Nutsedge, yellow (CYPERUS ESCULENTUS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.5, 1.0, and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 38 gal/A at 20 psi; 50% WP Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At two highest rates, effective control of broadleaf weeds, moderate control of grasses, and slight control of nutsedge with no adverse effect on potato yield
COMMENTS: Incorporated type treatments effective in giving season-long annual grass control, but pre-emergence treatments were not; EPTC only effective material on heavy stand of nutsedge
REFERENCE: Sanok, W.J., "Evaluation of Herbicides for Control of Weeds in Long Island Potatoes-1973," Proc. Northeast. Weed Sci. Soc. 28:282-286 (1974).

<2282>
<2282>
CHEMICAL NAME: DPX-2851
CHEMICAL COMMON NAME: DPX-2851
PLANT: Broadleaf weeds; Grasses; Nutsedge, yellow (CYPERUS ESCULENTUS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.5, 1.0 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 38 gal/A at 20 psi; 50% WP Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At highest rate, effective control of broadleaf weeds, moderate control of nutsedge, and slight control of grassweeds with reduced potato yield
COMMENTS: Incorporated type treatments effective in giving season-long annual grass control, but pre-emergence treatments were not; EPTC only effective material on heavy stand of nutsedge
REFERENCE: Sanok, W.J., "Evaluation of Herbicides for Control of Weeds in Long Island Potatoes-1973," Proc. Northeast. Weed Sci. Soc. 28:282-286 (1974).

<2283>
CHEMICAL NAME: DS 23017
CHEMICAL COMMON NAME: DS-23017
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence and preplant incorporated (4 in. depth) sprays; 15 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of nutsedge; preplant incorporated application slightly more effective
COMMENTS: Cyperquat and bentazon in postemergence application most effective herbicides, and CGA-24705 and U-44344 in preplant incorporated application most effective; perfluidone most effective preemergence application
REFERENCE: Kurtz, W.L. and E.W. Stroube, "Control of Yellow Nutsedge by Various Herbicides," Proc. N. Cent. Weed Contr. Conf. 30:59 (1975).

<2284>
CHEMICAL NAME: Dual
CHEMICAL COMMON NAME: Dual
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam
EFFECTS: Effective control of grass weeds and moderate control of broadleafs with no adverse effect on corn yield
COMMENTS: Butylate and EPTC+R-25788 preplant incorporated applications provided excellent grassy weed control; fall panicum and crabgrass control obtained by various combination treatments which included alachlor, procyazine, atrazine, penoxalin, bifenox, metolachlor, or Vel 5026
REFERENCE: Vengris, J., "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 31:1-5 (1977).

<2285>
CHEMICAL NAME: Dyanap
CHEMICAL COMMON NAME: Dyanap
PLANT: Cocklebur, common (XANTHIUM PENSYLVANICUM); Jimsomweed (DATURA STRAMONIUM); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.0 and 4.0 qt/A
APPLICATION METHODS: Postemergence spray; 10 or 25 gal/A at 60 or 30 psi; used in combination with alachlor at 2.0 qt/A for grass control
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of both weeds with no adverse effect on soybean yield
COMMENTS: Any of four herbicides tested provided excellent control and result in favorable net return if used early in cropping season; later applications, although better than no treatments, resulted in considerably lower net return
REFERENCE: Coble, H. D., "Optimizing Broadleaf Weed Control in Soybeans With Postemergence Herbicide," Down Earth 32(4):12-15 (1977).

<2286>
CHEMICAL NAME: EH 5722
CHEMICAL COMMON NAME: EH-5722
PLANT: Gladiolus; Ragweed, common (AMBROSIA ELATIOR); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Bromegrass, downy (BROMUS TECTORUM); Crabgrass, large (DIGITARIA SANGUINALIS); Purslane, common (PORTULACA OLERACEA); Weeds
EXPERIMENTAL DOSE: 1, 2, and 3 lb/A
APPLICATION METHODS: Preemergence spray at 50 gpa
EXPERIMENTAL CONDITIONS: Cormels planted June 15, herbicides applied June 21; weed counts taken July 12; approximately 1/2 acre planted in corms and 1/2 acre in cormels; 50 X 2 ft plots with 4 replications
EFFECTS: No weed control at 1 and 2 lb/A; 12% weed control at 3 lb/A
COMMENTS: Overall weed control considered for tabulations
REFERENCE: Carlson, R.F., J.E. Moulton, and P.R. Krone, "Further Developments in Gladiolus Weed Control," Proc. Northeast. Weed Control Conf. (1951).

<2287>
CHEMICAL NAME: EL 131
CHEMICAL COMMON NAME: EL-131
PLANT: Fescue, creeping red (FESTUCA RUBRA); Bluegrass, Kentucky (POA PRATENSIS); Crabgrass (DIGITARIA ISCHAEMUM); Bentgrass, Rhode Island (AGROSTIS TENUIS)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: Spray application in water at rate of 172 gpa; one application made in July
EXPERIMENTAL CONDITIONS: 4 x 5 ft plots with 3 replications; turfgrass injury assessed in July, August, and

<2287> CONT.
September; crabgrass control assessed in September
EFFECTS: 74% crabgrass control; minor turfgrass injury
COMMENTS: Recommended for further investigation at higher or split rates
REFERENCE: Jagschitz, J.A., "Postemergence Crabgrass and Nutsedge Control in Turfgrass with Herbicides," Proc. Northeast. Weed Sci. Soc. 29:376-381 (1975).

<2288>
CHEMICAL NAME: EL 131
CHEMICAL COMMON NAME: EL-131
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.50, 2.25, and 3.00 lb/A; 50% WS
APPLICATION METHODS: Broadcast (G) with spreader; preemergence spray, 40 gal/A
EXPERIMENTAL CONDITIONS: Field study: mature Kentucky bluegrass lawn; soils-sandy and loam; crabgrass seed sown on lawn just prior to applications
EFFECTS: Moderate control of crabgrass
COMMENTS: A-820, CG-10832, PPG-139 and RP-17623 gave good crabgrass control; April versus May application of several of preemergence types show that specific guidelines are needed to obtain efficient crabgrass control; goosegrass control fair to good for several chemicals, but all materials considered poor to unsatisfactory
REFERENCE: Engel, R.E., C.W. Bussey, and P. Catron, "Crabgrass and Goosegrass Control in Turfgrass with Several Preemerge Herbicides," Proc. Northeast. Weed Sci. Soc. 29:369-371 (1975).

<2289>
CHEMICAL NAME: EL 161
CHEMICAL COMMON NAME: EL-161
PLANT: Grasses; Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared June of following year; single row plots, 5 by 36 ft; cucumbers seeded 1 day after seedbed preparation; plots harvested 2 months after planting
EFFECTS: Moderate injury to cucumbers, good control of grasses, pigweed, and purslane at 1.5 lb/A; minor cucumber injury, good grass and purslane control, fair pigweed control at 1.0 lb/A
REFERENCE: Noll, C.J., "Weed Control in Cucumbers in a Conventional Planting and in a Stale Seed Bed," Proc. Northeast. Weed Sci. Soc. 31:248-251 (1977).

<2290>
CHEMICAL NAME: EL 509
CHEMICAL COMMON NAME: EL-509
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Postemergence spray (liquids) and drop-spreader granular formed; second application made if deemed necessary; 1% G and 1% EC formulations
EXPERIMENTAL CONDITIONS: Field study; evaluation time--4 mo with mowing at 5 to 8 day intervals
EFFECTS: No growth reduction even after second application with some grass discoloration after second application
COMMENTS: Proxazolon and MBR-12325 retarded growth more than the other materials; proxazolon slower acting than MBR-12325; EL-509 only material that did not significantly retard growth; 4 weeks after initial application, turf that had been significantly reduced in growth, grew faster than untreated; all materials caused an unacceptable discoloration lasting for 2 to 3 weeks; lower rates tended to cause less discoloration, but growth suppression did not last as long as higher rates
REFERENCE: Watschke, T.L., "Growth Regulation of Kentucky Bluegrass With Several Growth Retardants," Agron. J. 68(1):787-791 (1976).

<2291>
CHEMICAL NAME: Ergoline-8-carboxamide, 9,10-didehydro-N,N-diethyl-6-methyl-
CHEMICAL COMMON NAME: LSD
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Sandoz, 25 ug/ml
APPLICATION METHODS: Aqueous solution treatment for 4 or 8 hr
EXPERIMENTAL CONDITIONS: Overnight germination at 25 C, then treated; 4- or 8-hr recovery period before root tips examined
EFFECTS: Chromosome aberrations--mostly chromosome breaks
REFERENCE: Singh, M.P., C.S. Kalia, and H.K. Jain, "Chromosomal Aberrations Induced in Barley by LSD," Science 169:491-492 (1970).

<2292>
CHEMICAL NAME: Ergosta-2,24-dien-26-oic acid, 5,6-epoxy-4,22,27-trihydroxy-1-oxo-, delta-lactone, (4 beta, 5 beta, 6 beta, 22R)-
CHEMICAL COMMON NAME: Withaferin A
PLANT: Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 0.01 to 0.5%
APPLICATION METHODS: Solution Treatment
EXPERIMENTAL CONDITIONS: Bulbs placed in test solutions when roots 1 cm long; 3 replications; solutions changed every 2 days; 14 day test, measurements of roots daily; root tips fixed at 2, 24, and 48 hr

<2292>
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intervals
EFFECTS: Root growth inhibited after 2 days at 0.01%; c-tumor formation and lateral root formation induced; mitotic arrest at metaphase exident 2 hr after treatment
REFERENCE: Shohat, B. and H. Joshua, "The Effect of Withaferin A on Plant Cells," Eur. J. Cancer 7:561-563 (1971).

<2293>
CHEMICAL NAME: Ergoline-8-carboxamide, 9,10-didehydro-N,N-diethyl-6-methyl, (8 beta)-
CHEMICAL COMMON NAME: LSD
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 25 mg/ml
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; emerging root tips from germinating seed
EFFECTS: Chromosome abberations in root tip cells and reduced growth of seedlings
COMMENTS: LSD induced extensive chromosomal aberrations; also stimulated mitotic activity in root cells within a few hours; chromosomal aberrations induced by LSD qualitatively different from those produced by radiation and various other chemicals
REFERENCE: Kalia, C.S., M.P. Singh, H.K. Jain, and R.K. Katiyar, "LSD Induced Genetic Damage in Barley," Chromosoma 32:142-151 (1970).

<2294>
CHEMICAL NAME: Espesol 3
CHEMICAL COMMON NAME: Espesol 3
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 0.1 to 2.5%
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Slight bud injury
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:78-83 (1962).

<2295>
CHEMICAL NAME: Espesol 5
CHEMICAL COMMON NAME: Espesol 5
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 0.1 to 2.5%
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Slight bud injury
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:78-83 (1962).

<2296>
CHEMICAL NAME: Estra-1,3,5(10)-trien-17-one,3-hydroxy-
CHEMICAL COMMON NAME: Estrone
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 and 0.001 micro g; 0.05% Tween 20 and ethanol
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time -- up to 96 hr
EFFECTS: Stimulated growth
COMMENTS: Gibberellin and estrone gave identical growth effects; quantitative comparison of endogenous gibberellin contents in gibberellin and estrone treated plants showed clearly that when plants do not show any differences in growth rate, they are characterized simultaneously by very similar gibberellin contents
REFERENCE: Kopcewicz, J., "Influence of Estrone on Growth and Endogenous Gibberellins Content in Dwarf Pea," Bull. L'Academie Polonaise Des Sciences 17:727-731 (1969).

<2297>
CHEMICAL NAME: Estra-1,3,5(10)-trien-17-one,3-hydroxy-
CHEMICAL COMMON NAME: Estrone
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 to 10 micro g/plant; 0.05% Tween 20 and ethanol
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Stimulated growth at 0.1 to 1.0 micro g/plant
COMMENTS: Estrone 17-beta-estradiol, and beta-sitosterol increased growth of pea; treatment with cholesterol and testosterone resulted in no observable stimulation of growth
REFERENCE: Kopcewicz, J., "Influence of Steroids on the Growth of the Dwarf Pea," Kurze Originalmitteilungen 56(5):287 (1969).

<2298>
CHEMICAL NAME: Estra-1,3,5(10)-triene-3,17-diol(17 beta)-
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 to 10 micro g/plant; 0.05% Tween 20 and ethanol
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Stimulated growth at 0.1 to 1.0 micro g/plant
COMMENTS: Estrone, 17-beta-estradiol, and beta-sitosterol increased growth of pea; treatment with cholesterol and testosterone resulted in no observable stimulation of growth
REFERENCE: Kopcewicz, J., "Influence of Steroids on the Growth of the Dwarf Pea," Kurze Originalmitteilungen 56(5):287 (1969).

<2299>
CHEMICAL NAME: Ethanamine, N,N-diethyl-2-pentachlorophenoxy-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Severe damage to peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; phenol, 2,2'-(2,2,2-trichloroethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<2300>
CHEMICAL NAME: Ethanamine, 2-chloro-N,N-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A
APPLICATION METHODS: Preemergence treatment as 5 ml of 2% aqueous acetone solution
EXPERIMENTAL CONDITIONS: Wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds
EFFECTS: Normal growth
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<2301>
CHEMICAL NAME: Ethanaminium, 2-(acetyloxy)-N,N,N-trimethyl-, chloride
CHEMICAL COMMON NAME: Acetylcholine chloride
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2302>
CHEMICAL NAME: Ethanaminium, 2-chloro-N,N,N-trimethyl-
CHEMICAL COMMON NAME: Chlormequat
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS);Bermudagrass, common (CYNODON DACTYLON);Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 50, 250, 500, and 2500 ppm
APPLICATION METHODS: 5 sec immersion of intact plant in test solution
EXPERIMENTAL CONDITIONS: Greenhouse container culture; soil--Newe Yaar clay; evaluation time--4 and 6 wk
EFFECTS: Reduced shoot length of all test plants
COMMENTS: Effects varied from simulation to inhibition of aerial growth, increases in shoot number, and kill of plants
REFERENCE: Horowitz, M., "Effect of Growth Regulators on CYNODON DACTYLON (L.) Pers., SORGHUM HALEPENSE (L.) Pers., and CYPERUS ROTUNDUS L.," Weed Res. 12(1):11-20 (1972).

<2303>
CHEMICAL NAME: Ethanaminium, 2-chloro-N,N,N-trimethyl-
CHEMICAL COMMON NAME: Chlormequat
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS);Bermudagrass, common (CYNODON DACTYLON);Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 3.75 and 7.5 kg/ha
APPLICATION METHODS: Postemergence spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Greenhouse container culture; evaluation time--5 mo
EFFECTS: Inhibition of nutsedge shoot length only at higher application rate; other test plants had no adverse effects
COMMENTS: Effect of combinations of foliar spraying with ethephon, MH, flurecol or chlorflurecol followed after 2 days by spraying with the herbicides ddalapon or aminotriazole activated with ammonium thiocyanate, investigated; herbicides applied alone had no marked effect but combinations were generally

<2303>
<2303> CONT.
more toxic; ethephon stimulated growth of C. DACTYLON but combination with dalapon was phytotoxic; MH sprayed alone and combinations of flurecol or chlorflurecol with dalapon or aminotriazole were highly inhibitory to S. HALEPENSE; none of the treatments completely inhibited regrowth of C. ROTUNDUS
REFERENCE: Horowitz, M., "Effect of Growth Regulators on CYNODON DACTYLON (L.) Pers., SORGHUM HALEPENSE (L.) Pers., and CYPERUS ROTUNDUS L.," Weed Res. 12(1):11-20 (1972).

<2304>
CHEMICAL NAME: Ethanaminium, 2-chloro-N,N,N-trimethyl-
CHEMICAL COMMON NAME: Chlormequat
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<2305>
CHEMICAL NAME: Ethanaminium, 2-chloro-N,N,N-trimethyl-, chloride
CHEMICAL COMMON NAME: CCC
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 12.0 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field Study
EFFECTS: Altered calcium content of wheat stalks and ears and by inference also content of pectin
COMMENTS: CCC exerts influence not only on total calcium content in wheat stalks, but also on distribution
REFERENCE: Blaim, K. and J. Szynal, "Influence of (2-Chloroethyl)-Trimethyl-Ammonium Chloride (CCC) on the Content and Distribution of Calcium in Wheat Stalks During Growth," Bull. L'Acad. Polonaise des Sci. 16:63-65 (1968).

<2306>
CHEMICAL NAME: Ethanaminium, 2-chloro-N,N,N-trimethyl-, chloride
CHEMICAL COMMON NAME: CCC
PLANT: Pine, slash (PINUS ELIOTTII)
EXPERIMENTAL DOSE: 5, 10, 20, and 40 g/cu ft; 2,000 to 16,000 ppm spray
APPLICATION METHODS: Addition to soil and foliar spray
EXPERIMENTAL CONDITIONS: Lath-house study; pot culture
EFFECTS: Reduced growth in height and leaf damage at highest two spray rates
COMMENTS: Lack of toxicity or other symptoms at highest level of 'Phosfon-D' indicated dosages too low; CCC applied as foliar spray, with or without wetting agent, significantly depressed seedling height growth; extensive damage to foliage (needles stunted and chlorotic) and developing shoots resulted
REFERENCE: Asher, W.C., "Effects of 2-Chloroethyltrimethylammonium Chloride and 2,4-Dichlorobenzyltributyl Phosphonium Chloride on Growth and Transpiration of Slash Pine," Nature 200:912 (1963).

<2307>
CHEMICAL NAME: Ethanaminium, 2-chloro-N,N,N-trimethyl-, chloride
CHEMICAL COMMON NAME: Cycocel
PLANT: Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 100 and 5000 ppm
APPLICATION METHODS: Trial 1--germination on paper towels wetted with test solution; trial 2--preplanting, 250 ml of 5000 ppm solution
EXPERIMENTAL CONDITIONS: Trial 1--seeds germinated on paper towels completely wetted with 100 ppm solution, effect on roots observed; trial 2--wooden flats with soil mixture, 25 bean seeds per flat, effects on emergence, early growth and seedling development studied
EFFECTS: Trial 1--no effect on germination, rooting, and root hair formation, reduction in length of tap and lateral roots and in number of root hairs; trial 2-- short stock plants with compact root systems and large leaves
REFERENCE: Lingaraj, D.S. and K.M. Srinivasan, "A Note on Cycocel (2-Chloroethyl Trimethyl Ammonium Chloride), a Newly Released Plant Growth Regulant," Curr. Sci. 36(8):215-216 (1967).

<2308>
CHEMICAL NAME: Ethanaminium, 2-chloro-N,N,N-trimethyl, chloride
CHEMICAL COMMON NAME: CCC
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1X10(-2)M
APPLICATION METHODS: Solution immersion
EXPERIMENTAL CONDITIONS: Laboratory study; sections of etiolated pea hypocotyls immersed in solutions; 250 mg/5 ml; evaluation time--24 hr; temperature--25C
EFFECTS: Reduced growth but no effect on respiration
COMMENTS: Activity of IAA in control series increased to same extent as fresh matter, i.e. by about 40%; Phosfon 1) and CCC decreased growth by about 50% and did not significantly increase activity of IAA; coumrin inhibited synthesis of enzyme; of growth stimulators tested, only gibberellic acid (GA-3) significantly decreased activity of IAA in CCC series
REFERENCE: Knypl, J.S. and A. Rennert, "Growth Inhibitors and the Indole-3-acetic Acid Oxidase Contents of Cucumber Hypocotyl Sections," Kurse 54:544 (1967).

<2309>
CHEMICAL NAME: Ethanaminium, 2-chloro-N,N,N,-trimethyl-, chloride
CHEMICAL COMMON NAME: Chlormequat chloride
PLANT: Peppermint (MENTHA PIPERITA)
EXPERIMENTAL DOSE: 50, 100, 250, 500, 1000, 2000, 4000, and 16000 ppm
APPLICATION METHODS: Aqueous soil drench, 150 ml per 4.25-in. pot for first treatment and 1000 ml per 9.5-in. pot for second treatment; second treatment, 14 days after initial treatment
EXPERIMENTAL CONDITIONS: Greenhouse studies; stolons planted in 9.5-in. pots; 21-24 C day and 10-13 C night temperature maintained with 16-hr photoperiod; after 35 days, cuttings planted (5 to a pot) in 4.25-in. pots so that lowest node covered; 16 days later, plants individually transplanted to other 4.25-in. pots; 90 plants treated 7 days after last transplant
EFFECTS: Response within one week at 250 ppm; as concentration increased, plants became more compact with smaller leaves; 16000 ppm caused chlorotic and scorched patches on leaf margins and tips; growth retardation evident after first week; 250 ppm and above caused shorter plants; except at 16000 ppm, no morphological or growth differences noticed at harvest (42 days after second chemical treatment); height reductions evident at harvest, especially with 500 ppm and above exposures
COMMENTS: Effects on volatile oil composition also presented
REFERENCE: Hook, I.L.I., C.S. O'Connor, and B.F. Timoney, "Some Effects of Chlorocholine Chloride on MENTHA PIPERITA," Planta Med. 24(3):249-259 (1973).

<2310>
CHEMICAL NAME: Ethanaminium, 2-chloro-N,N,N,-trimethyl-, chloride
CHEMICAL COMMON NAME: Chlormequat chloride
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 250 mg/plant
APPLICATION METHODS: Compound administered with watering
EXPERIMENTAL CONDITIONS: Greenhouse study; seedlings transferred to pots 9 days after sprouting; test compound applied 18 days after planting--first pair of leaves extending; 7 and 11-leaf stage plants exposed to 0.45% by volume carbon-14 labelled CO(2) for 40 min in 700 l. plexiglass box--photosynthesis test
EFFECTS: Growth decrease significant on 17th day after application--smaller leaf area due to smaller size and number of cells; photosynthetic activity reduced when compared with control
COMMENTS: Smaller leaf surface possibly limited CO(2) diffusion causing decrease in photosynthesis; treated plants had better resistance to frost than untreated controls; compound also known as CCC
REFERENCE: Birecka, H. and Z. Zebrowski, "Influence of (2-chloroethyl) Trimethylammonium chloride (CCC) on Photosynthetic Activity and Frost Resistance of Tomato Plants," Plant Physiol. 14(1):367-373 (1966).

<2311>
CHEMICAL NAME: Ethanaminium, 2-chloro-N,N,N,-trimethyl-, chloride
CHEMICAL COMMON NAME: CCC
PLANT: Bean, snap (PHASEOLUS VULGARIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 200 and 500 ppm
APPLICATION METHODS: Postemergence treatments in nutrient solution; 6 applications to bean within 20 days, 5 applications to corn within 12 days
EXPERIMENTAL CONDITIONS: Hydroponically grown in greenhouse; seeds sprouted and transferred to 1-gal stone crocks, 5 plants/crock; randomized block design with 5 replications; bean harvested after 40 days, corn after 31 days; top and root growth and cation exchange capacity (CEC) measured
EFFECTS: Bean top growth significantly reduced at 200 ppm; no significant root or top decrease in corn at 500 ppm; no significant decrease in corn or bean CEC
REFERENCE: Lambeth, V.N. and R.C. Das, "Growth Regulator Effects on Top-Root Ratio and Cation Exchange Capacity of Snap Bean and Sweet Corn Roots," J. Am. Soc. Hortic. Sci. 86:357-360 (1965).

<2312>
CHEMICAL NAME: Ethanaminium, 2-hdyroxy-N,N-bis(2-hydroxyethyl)-N-(phenylmercurio)-, salt with 2-hdyroxypropanoic acid (1:1)
CHEMICAL COMMON NAME: Puraturf
PLANT: Crabgrass (DIGITARIA sp.); Bentgrass, creeping (AGROSTIS PALUSTRIS); Bentgrass, Rhode Island (AGROSTIS TENUIS)
EXPERIMENTAL DOSE: 1:13,000, 10 gal/1000 sq ft; applied 10 day intervals
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective crabgrass control with no adverse effect on grasses of golf putting green
COMMENTS: Puraturf and Puratized 806, gave good control of crabgrass; twenty-two different treatments used but most had no appreciable effect on crabgrass
REFERENCE: DeFrance, J.A., "Water-Soluble Mercurials for Crabgrass Control in Turf," Greenkeepers' Rept. 15(1):30-31 (1947).

<2313>
CHEMICAL NAME: Ethanaminium, 2-hydroxy-N,N-bis(2-hdyroxyethyl)-N-(phenylmercurio)-, salt with 2-hydroxypropanoic acid (1:1)
PLANT: Oak, white (QUERCUS ALBA); Hickory (CARYA sp.); Maple, red (ACER RUBRUM)
EXPERIMENTAL DOSE: 7.5% (1 to 16 pt/100 gal)
APPLICATION METHODS: Foliar spray; single and repeat applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Leaf damage to all species and stunting of white oak leaves at highest rates; one pt/100 gal rate safe for anthracnase control
COMMENTS: Leaves with marginal necrisis, downward curling and defoliation in advanced stages, observed in large white oak trees in western Pennsylvania; trees sprayed at bud break, 14 days later, and about 20

<2313>
<2313> CONT.
days later with phenyl mercuri triethanol ammonium lactate; injury not present on all trees and, in some cases, branches of trees showing foliage injury were interlaced with branches of adjoining trees which apparently unaffected
REFERENCE: Nichols, L.P., "Phytotoxicity of Phenylmercury Sprays to White Oak Foliage," Plant Dis. Rept. 45(5):346-347 (1961).

<2314>
CHEMICAL NAME: Ethanaminium, 2-hydroxy-N,N-bis(2-hydroxyethyl)-N-(phenylmercurio)-, salt with 2-hydroxypropanoic acid (1:1)
CHEMICAL COMMON NAME: Puraturf CK
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 16.1 qt/A
APPLICATION METHODS: Foliar spray, 360 gal/A; 3 weekly applications
EXPERIMENTAL CONDITIONS: Field study; time period--1948 to 1950
EFFECTS: Effective crabgrass control with no adverse effect on turfgrasses
COMMENTS: S-1840, S-1980, and S-1998 gave crabgrass control equivalent to several phenyl mercury compounds and potassium cyanate; essentially no injury evident 36 days after treatment
REFERENCE: Engel, R.E. and R.J. Aldrich, "Three New Compounds for controlling Crabgrass in Turf," Proc. N.E. Weed cont. Conf. 5:151-160 (1951).

<2315>
CHEMICAL NAME: Ethane, dichloro-
CHEMICAL COMMON NAME: Dichloroethane
PLANT: Lettuce (LACTUCA SATIVA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 100%
APPLICATION METHODS: Seed soak
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; seeds soaked for 24 or 44 hr then placed on filter paper contained in petri plates; solvents removed by vacuum drying
EFFECTS: After 44-hr soak, strongly suppressed germination of lettuce seed and no effect on pea germination
COMMENTS: Anhydrous dichloromethane had no effect on germination or on uptake of oxygen when lettuce seeds treated for up to 24 hours; in contrast, anhydrous acetone distinctly depressed uptake of oxygen; when coumarin applied together with dichloromethane, germination and uptake of oxygen inhibited
REFERENCE: Meyer, H. and A. M. Mayer, "Permeation of Dry Seeds With Chemicals: Use of Dichloromethane," Science 171:583-584 (1971).

<2316>
CHEMICAL NAME: Ethane, tetrachloro-
CHEMICAL COMMON NAME: Tetrachlorethane
PLANT: Bindweed, field (CONVOLVULUS ARVENSIS); Bluegrass, Kentucky (POA PRATENSIS); Millet, proso (PANICUM MILIACEUM)
EXPERIMENTAL DOSE: 2 oz/18 in hole at 18 in. intervals
APPLICATION METHODS: Added to soil
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective bindweed control
COMMENTS: Bindweed completely eradicated in all tetrachlorethane experiments; plots treated in November and sown with millet following June produced practically normal crop; bluegrass on lawns treated with tetrachlorethane showed deleterious effects next season, but effects not permanent
REFERENCE: Bakke, A.L., "The Use of Tetrachlorethane in the Eradication of the European Bindweed," J. Am. Soc. Agron. 33(8):759-761 (1941).

<2317>
CHEMICAL NAME: Ethane, 1,1'-oxybis[2-chloro-
PLANT: Dandelion, common (TARAXACUM OFFICINALE); Buckhorn (PLANTAGO LANCEOLATA); Bluegrass, Kentucky (POA PRATENSIS); Sida, spiny (SIDA SPINOSA); Foxtail, yellow (SETARIA GLAUCA); Three-seeded mercury (ACALYPHA VIRGINICA); Spurge, spotted (EUPHORBIA MACULATA); (PASPALUM PUBESCENS)
EXPERIMENTAL DOSE: 1.0 and 2.25 gal per sq yd
APPLICATION METHODS: Treatments to established plants; 1 gal treatment contained 32 cc ether, 2.25 gal treatment contained 72 cc ether
EXPERIMENTAL CONDITIONS: 24 plots for dandelion study and 8 plots for buckhorn study, each 6 X 6 ft; 1.0 and 2.25 gal per sq yd applied to dandelion plots, only 2.25 gal per yd applied to buckhorn plots; plots were Kentucky bluegrass sod that contained test species; 0.5 or 0.1% 'Tergitol' penetrant 7 added to some test solutions
EFFECTS: 95.1% mean dandelion kill eleven days after 2.25 gal treatment, 78.6% kill recorded 11 days after 1.0 gal treatment, bluegrass injury in a few plots; very few buckhorn plants killed; sida killed by heavier rate; spotted spurge, yellow foxtail and three-seeded mercury not affected; slight injury to P. PUBESCENS
COMMENTS: Dandelion roots killed to depth of 6 inches, some dandelion roots extend to 30 in.--control good for 9 weeks
REFERENCE: Templeton, W.C., Jr. and P.O. Ritcher, "Dandelion Control with Dichloroethyl Ether," J. Am. Soc. Agron. 34(3):283-284 (1942).

<2318>
CHEMICAL NAME: Ethane, 1,1'-thiobis-
CHEMICAL COMMON NAME: Diethyl sulfide
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity

<2318> CONT.
measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: No damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2319>
CHEMICAL NAME: Ethane, 1,2-dibromo-
CHEMICAL COMMON NAME: Ethylene dibromide
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.01 to 5.00 ml/container
APPLICATION METHODS: Fumigation by injection into soil
EXPERIMENTAL CONDITIONS: Greenhouse study; soils--Yolo loam, Yolo silt clay, and Staten peaty-muck; tomato seedlings (one mo) planted 2 wk after treatment; evaluation time--one mo; temperatures--60, 70, and 80 F
EFFECTS: Reduced growth at 0.5 ml rate and kill at higher rates
COMMENTS: Phytotoxicity of EDB particularly marked in air-dried soils, indicating greater retention of fumigant vapor in dry system as compared to soils maintained at field capacity; total Br taken up by plants generally greater from moist soils than from air-dry soils although concentration in plants was in reverse order; concentration of Br in plant increased with increasing rates of EDB
REFERENCE: Brown, A.L., J.J. Jurinak, and P.E. Martin, "Plant Growth as Affected by Ethylene Dibromide Fumigation of Soils at Two Moisture Levels," Soil Sci. Soc. Am. Proc. 23:311-313 (1959).

<2320>
CHEMICAL NAME: Ethane, 2-bromo-2-chloro-1,1,1-trifluoro-
CHEMICAL COMMON NAME: Halothane
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0%
APPLICATION METHODS: Exposure to halothane vaporized in room air; 250 ml/min flow rate
EXPERIMENTAL CONDITIONS: Plants germinated in contact with wet filter paper in 2-liter beaker; entire plant placed in desiccator for 2 to 24 hr halothane exposure--4 and 8 hr exposure examined in detail
EFFECTS: Reduction in % normal methaphase and normal anaphase--27.3% normal methaphase and 33.3% normal anaphase at 0.5% for 4 hr, 1.3% normal metaphase and 9.0% normal analphase at 2.0% for 4 hr, 20.8% normal metaphase and 28.4% normal anaphase at 0.5% for 8 hr, 0% normal metaphase and 0.7% normal anaphase at 2.2% for 8 hr
COMMENTS: Control--44% normal metaphase and 49% normal anaphase
REFERENCE: Nunn, J.F., J.D. Lovis, and K.L. Kimball, "Arrest of Mitosis by Halothane," Br. J. Anaesth. 43:524-530 (1971).

<2321>
CHEMICAL NAME: Ethanesulfonate, ethyl
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0 to 498 nM
APPLICATION METHODS: 200 seeds soaked in test solutions for 12 hr
EXPERIMENTAL CONDITIONS: Flasks containing seeds thoroughly shaken; treatment temperature maintained at 20 + or - 2 C; seeds washed in water after treatment; 160 seeds used for raising m(1) generation in field, other seeds germinated in Petri dishes
EFFECTS: 58.38 + or - 4.05% pollen sterility at 496 nM compared with control (15.46 + or - 1.6%); seedling height reduced at higher concentrations; no germination at higher concentrations
COMMENTS: Cytological abnormalities and mutagenicity also studied
REFERENCE: Nagaraja, R. and A.T. Natarajan, "Mutagenicity of Some Alkyl Alkanesulfonates in Barley," Mutat. Res. 2:132-148 (1965).

<2322>
CHEMICAL NAME: Ethanesulfonate, methyl-
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0-40 nM
APPLICATION METHODS: 200 seeds soaked in test solutions for 12 hr
EXPERIMENTAL CONDITIONS: Flasks containing seeds thoroughly shaken; treatment temperature maintained at 20 + or - 2 C; seeds washed in water after treatment; 160 seeds used for raising m(1) generation in field, other seeds germinated in Petri dishes
EFFECTS: 25.11 + or - 4.11% pollen sterility at 19 nM compared with control (15.46 + or - 1.6%); seedling height drastically reduced at higher concentrations; seeds did not germinate at higher concentrations
COMMENTS: Cytological abnormalities and mutagenicity also studied
REFERENCE: Nagaraja, R. and A.T. Natarajan, "Mutagenicity of Some Alkyl Alkanesulfonates in Barley," Mutat. Res. 2:132-148 (1965).

<2323>
<2323>
CHEMICAL NAME: Ethanesulfonic acid, 2-[methyl(1-oxo-9-octadecenyl)amino]-, sodium salt, (Z)-
CHEMICAL COMMON NAME: Igepon T 51
PLANT: Lychee (LITCHI CHINENSIS)
EXPERIMENTAL DOSE: 1:500 and 1:1000
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Local chlorosis at leaf tip
COMMENTS: Lychee leaves susceptible to ionic and nonionic surfactants; injury due to wetting agents ranged from complete necrosis of leaves to chlorosis and mottling and premature leaf fall
REFERENCE: Nakata, S. and Y. Tanada, "Phytotoxicity of Wetting Agents on Lychee," J. Econ. Ent. 54(6):1074-1076 (1961).

<2324>
CHEMICAL NAME: Ethanesulfonic acid, 2-[methyl(1-oxo-9-octadecenyl)amino]-, sodium salt, (Z)-
CHEMICAL COMMON NAME: Igepon T 77
PLANT: Lychee (LITCHI CHINENSIS)
EXPERIMENTAL DOSE: 1:500 and 1:1000
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Local chlorosis at leaf tip
COMMENTS: Lychee leaves susceptible to ionic and nonionic surfactants; injury due to wetting agents ranged from complete necrosis of leaves to chlorosis and mottling and premature leaf fall
REFERENCE: Nakata, S. and Y. Tanada, "Phytotoxicity of Wetting Agents on Lychee," J. Econ. Ent. 54(6):1074-1076 (1961).

<2325>
CHEMICAL NAME: Ethanesulfonic acid, 2-[methyl(1-oxododecyl)amino]-, sodium salt
CHEMICAL COMMON NAME: Igepon TC
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: No survival of PHALAENOPSIS at 1000 ppm and reduced survival at 100 ppm; no growth of EPIDENDRUM at 1000 ppm
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<2326>
CHEMICAL NAME: Ethanimidothioic acid, N-[[(methylamino)carbonyl]oxy]-, methyl ester
CHEMICAL COMMON NAME: Methomyl
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: 90% WD formulation; postemergence--late-whorl stage and early-boot stage; preemergence treatments also
EXPERIMENTAL CONDITIONS: Experiment 1--11 treatments, 2 rows by 30 ft plots, application July 30 to late-whorl stage sorghum; experiment 2--7 treatments, 2 rows by 25 ft plots, August 7 insecticide application to early-boot stage of sorghum; experiment 3--27 treatments, 2 rows by 50 ft plots, preemergence treatment, phytotoxicity measured by plant emergence; randomized complete block design with 3 replicates; test compound is insecticide
EFFECTS: No reported toxicity
COMMENTS: Insecticide applied for greenbug control
REFERENCE: Depew, L.J., "Further Evaluation of Insecticides for Greenbug Control on Grain Sorghum in Kansas," J. Econ. Entomol. 65(4):1095-1098 (1972).

<2327>
CHEMICAL NAME: Ethanimidothioic acid, N-[[(methylamino)carbonyl]oxy]-, methyl ester
CHEMICAL COMMON NAME: Methomyl
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 lb/A; 5% G and 90% WP
APPLICATION METHODS: Granules in seed furrow and layby side dressing; postemergence spray for liquid applications; six application methods; multiple applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effect on growth or yield of soybean
COMMENTS: Stand counts revealed germination not affected by application of preplant granules; measurement made after foliar spray application at midbloom was only one to show significant differences among treated plots; plants taller in plots treated with disulfoton or check plots
REFERENCE: Wheeler, B. A. and M. H. Bass, "Effects of Certain Systemic Insecticides on Growth and Yield of Soybeans," J. Econ. Ent. 64(5):1219-1221 (1971).

<2328>
CHEMICAL NAME: Ethanimidothioic acid, N-[[(methylamino)carbonyl]oxy]-, methyl ester
CHEMICAL COMMON NAME: Methomyl
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Severe leaf damage with no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<2329>
CHEMICAL NAME: Ethanimidothioic acid, N-[[(methylamino)carbonyl]oxy]-, methyl ester
CHEMICAL COMMON NAME: Methomyl
PLANT: Petunia (PETUNIA sp.)
EXPERIMENTAL DOSE: 1000 ppm, EC and SP
APPLICATION METHODS: Added (spray) to agar medium disk to run-off
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--15 hr; pollen germinated and length of germination tube measured
EFFECTS: No adverse effect on germination or tube growth
COMMENTS: Germination of petunia and tomato pollen completely inhibited by topical applications of naled; reduction in germination and tube elongation of pollen caused by parathion, azinphosmethyl, difocol, endosulfan, dichlorvos, DDT, and gardona
REFERENCE: Gentile, A.G., K.J. Gallagher, and Z. Santner, "Effect of Some Formulated Insecticides on Pollen Germination in Tomato and Petunia," J. Econ. Ent. 64(4):916-919 (1971).

<2330>
CHEMICAL NAME: Ethanimidothioic acid, N-[[(methylamino)carbonyl]oxy]-, 2-cyanoethyl ester
CHEMICAL COMMON NAME: Shell SD-17250
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: 50% WP formulation; postemergence--late-whorl stage and early-boot stage; preemergence treatment also
EXPERIMENTAL CONDITIONS: Experiment 1--11 treatments, 2 rows by 30 ft plots, application July 30 to late-whorl stage sorghum; experiment 2--7 treatments, 2 rows by 25 ft plots, August 7 insecticide application to early-boot stage of sorghum; experiment 3--27 treatments, 2 rows by 50 ft plots, preemergence treatment, phytotoxicity measured by plant emergence; randomized complete block design with 3 replicates; test compound is insecticide
EFFECTS: No reported toxicity
COMMENTS: Insecticide applied for greenbug control
REFERENCE: Depew, L.J., "Further Evaluation of Insecticides for Greenbug Control on Grain Sorghum in Kansas," J. Econ. Entomol. 65(4):1095-1098 (1972).

<2331>
CHEMICAL NAME: Ethanimidothioic acid, 2-(dimethylamino)-N-[[(methylamino)carbonyl]oxy]-2-oxo-, methyl ester
CHEMICAL COMMON NAME: Oxamyl
PLANT: Apple (MALUS SYLVESTRIS); Apricot (PRUNUS ARMENIACA); Cherry (PRUNUS MAHALEB); Cherry (PRUNUS AVIUM); Peach (PRUNUS PERSICA); Pear (PYRUS COMMUNIS); Plum (PRUNUS DOMESTICA)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Foliar spray to runoff, 4X at two week intervals; 450 l./ha
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--21 to 30 C; soil--Vineland silt loam; pot culture
EFFECTS: No phytoxicity observed
COMMENTS: Oxamyl, aldicarb, and carbofuran reduced nematode numbers; phenamiphos was less effective; oxamyl and aldicarb also controlled aphids and mites
REFERENCE: Allen, W.R. and C.F. Marks, "Chemical Control and Population Studies of PRATYLENCHUS PENETRANS on Fruit Tree Understocks," Plant Dis. Rep. 61(2):84-87 (1977).

<2332>
CHEMICAL NAME: Ethanimidothioic acid, 2-(dimethylamino)-N-[[(methylamino)carbonyl]oxy]-2-oxo-, methyl ester
CHEMICAL COMMON NAME: Oxamyl
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Dracena (DRACAENA SANDERIANA); Prayer plant (MARANTA LEUCONEURA); Sword-fern (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal
APPLICATION METHODS: Amount formulated--1 and 2 quarts respectively; 4 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume equivalent); Plyac (spreader-sticker) added to controls and treatments at rate of 2 oz/100 gal water; sprays applied prior to 10:00 a.m.; 5 tests from May to November; temperature--83 to 98 F (day) and 56 to 78 F (night); greenhouse conditions
EFFECTS: A. SQUARROSA--slight injury at 0.5 lb (leaf deformity), moderate injury at 1.0 lb (leaf deformity, growth suppression); B. ACTINOPHYLLA--moderate injury at both rates (growth suppression); D. PICTA--no injury at 0.5 lb, moderate injury at 1.0 lb (marginal chlorosis and necrosis, tip necrosis); M.

<2332>
<2332> CONT.
LEUCONEURA--no injury at 0.5 lb, moderate injury at 1.0 lb(growth suppression, marginal chlorosis and necrosis, and tip necrosis); P. OBTUSIFOLIA--moderate injury at 0.5 lb (marginal chlorosis and necrosis), severe injury at 1.0 lb (marginal chlorosis and necrosis, chlorotic and necrotic flecking); no injury to C. ELEGANS, D. SANDERIANA, P. OXYCARDIUM, and S. AUREUS
COMMENTS: Experimental concentrations--recommended and twice the recommended rate

<2333>
CHEMICAL NAME: Ethanimidothioic acid, 2-(dimethylamino)-N-[[(methylamino)carbonyl]oxy]-2-oxo-, methyl ester
CHEMICAL COMMON NAME: Oxamyl
PLANT: Cordatum (PHILODENDRON OXYCARDIUM); Schefflera (BRASSAIA ACTINOPHYLLA); Zebra plant (APHELANDRA SQUARROSA); (NEPHROLEPIS sp.); Dieffenbachia (DIEFFENBACHIA PICTA); Dayflower, spreading (COMMELINA DIFFUSA); Peperomia (PEPEROMIA OBTUSIFOLIA); Peperomia, emerald ripple (PEPEROMIA CAPERATA); Peperomia, watermelon (PEPEROMIA SANDERSII); Golden pothos (SCINDAPSUS AUREUS); Purple passion plant (GYNURA SARMENTOSA); Red wax plant (HOYA CARNOSA); Aluminum plant (PILEA CADIEREI); Croton, gold dust (CODIAEUM VARIEGATUM); Spider plant (CHLOROPHYTUM COSMOSUM)
EXPERIMENTAL DOSE: 1.0 to 8.0 qt/100 gal; Triton B-1956 (4 oz/100 gal)
APPLICATION METHODS: Foliar spray to run-off; 4 applications at weekly intervals
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation times--1, 3, and 7 weeks
EFFECTS: At 2.0 qt/100 gal, damage to aralia, peperomia, pothos, and spider plant with little or no damage to remaining plants
COMMENTS: Oxamyl not phytotoxic to most plant species; PHILODENDRON OXYCARDIUM and HOYA CARNOSA most tolerant with no evidence of phytotoxicity on PHILODENDRON at any concentration and only slight evidence on HOYA; phytotoxic to PEPEROMIA sp. and CHLOROPHYTUM with exception of PEPEROMIA OBTUSIFOLIA
REFERENCE: Dunnan, A., "Evaluation of Oxamyl for Phytotoxicity to Selected Foliage Plants," Proc. Florida State Hort. Soc. 88:593-595 (1977).

<2334>
CHEMICAL NAME: Ethanimidothioic acid, 2-(dimethylamino)-N-[[(methylamino)carbonyl]oxy]-2-oxo-, methyl ester
CHEMICAL COMMON NAME: Vydate
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal (1X and 2X recommended rate); 2% EC
APPLICATION METHODS: Foliar spray; 3 applications once a week; sprayed to run-off at 40 psi
EXPERIMENTAL CONDITIONS: Field study; pot culture; slat shading; evaluation time--up to 5.5 wk
EFFECTS: Slight damage to olive, fig, laurel, and hibiscus with no adverse effect on other plants
COMMENTS: Araucaris, asparagus, chrysalidocarpus, coccoloba, codiaeum, dizygotheca, dracaena, philodendron, pittosporum, podocarpus, and veitcha tolerated most or all of these materials with essentially no damage; acalypha, brassaia, bucida, ficus, hibiscus, ligustrum, and viburnum were sensitive to many or all of the materials; at recommended rates, diazinon and carbaryl produced the least number of phytotoxic symptoms on the least number of species
REFERENCE: Neel, P.L. and J.A. Reinert, "Phytotoxicity Evaluations of Ten Insecticides on Twenty-Three Species of Ornamental Plants Under Slat Shed Conditions," Proc. Fla. State Hortic. Soc. 88:586-590 (1976).

<2335>
CHEMICAL NAME: Ethanimidoyl chloride, 2,2,2-trichloro-N-(pentachlorophenyl)-
CHEMICAL COMMON NAME: Bay 58733
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0, 16.0, and 32.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: At highest rates, slight to moderate leaf damage and stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<2336>
CHEMICAL NAME: Ethanol
CHEMICAL COMMON NAME: Ethanol
PLANT: Lettuce (LACTUCA SATIVA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 100%
APPLICATION METHODS: Seed soak
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; seeds soaked for 24 or 44 hr then placed on filter paper contained in petri plates; solvents removed by vacuum drying
EFFECTS: After 24 and 44 hr soak, moderate suppression of germination of lettuce seed but no adverse effect on peas
COMMENTS: Anhydrous dichloromethane had no effect on germination or on uptake of oxygen when lettuce seeds treated for up to 24 hours; in contrast, anhydrous acetone distinctly depressed uptake of oxygen; when coumarin applied together with dichloromethane, germination and uptake of oxygen inhibited
REFERENCE: Mever, H. and A. M. Mayer, "Permeation of Dry Seeds With Chemicals: Use of Dichloromethane," Science 171:583-584 (1971).

<2337>
CHEMICAL NAME: Ethanol, n-alkanol (C(12)-C(14)-polyethoxy-
CHEMICAL COMMON NAME: Alfonic 1214-6
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: Reduced survival of PHALAENOPSIS at 100 and 1000 ppm; no growth of EPIDENDRUM at 1000 ppm
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<2338>
CHEMICAL NAME: Ethanol, polyethoxy-
CHEMICAL COMMON NAME: Neodol 25-9
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: Reduced survival of PHALAENOPSIS at 100 and 1000 ppm; no growth of EPIDENDRUM at 1000 ppm
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<2339>
CHEMICAL NAME: Ethanol, trichlorobenzyloxy-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<2340>
CHEMICAL NAME: Ethanol, 2-(pentachlorophenoxy)-
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 250 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: Toxicity rating of 3
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<2341>
CHEMICAL NAME: Ethanol, 2-(2,4-dichlorophenoxy)-, benzoate
CHEMICAL COMMON NAME: 2,4-DEP
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2342>
<2342>
CHEMICAL NAME: Ethanol, 2-(2,4-dichlorophenoxy)-, hydrogen sulfate
CHEMICAL COMMON NAME: EH-1
PLANT: Strawberry (FRAGARIA sp.); Crabgrass (DIGITARIA sp.); Stinkweed (THLASPI ARVENSE); Carpetweed (MOLLUGO VERTICILLATA); Pusley, Florida (RICHARDIA SCABRA); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1, 3, and 6 lb/A
APPLICATION METHODS: Treatments in 100 gpa following cultivation and hand-hoeing
EXPERIMENTAL CONDITIONS: 3 tests; randomized block design with 3 replications for test 1 and 2; split-plot design with 3 replications for test 3; multiple applications
EFFECTS: Effective weed emergence control; no injury to strawberry plants
COMMENTS: Weeds tabulated as grasses and broadleaves; compound designated as experimental herbicide #1 by researchers
REFERENCE: Aldrich, R.J. and R.E. Puffer, "Two Years Results on the Use of Certain Herbicides for Weed Control in Various Varieties of Strawberries", Proc. Northeast. Weed Control Conf. :65-68 (1951).

<2343>
CHEMICAL NAME: Ethanol, 2-(2,4-dichlorophenoxy)-, hydrogen sulfate, sodium salt
CHEMICAL COMMON NAME: Sesone
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 90% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate control of all weeds with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<2344>
CHEMICAL NAME: Ethanol, 2-(2,4-dichlorophenoxy)-, hydrogen sulfate, sodium salt
CHEMICAL COMMON NAME: Silvex
PLANT: Juniper, Savin (JUNIPERUS SABINA); Broadleaf weeds
EXPERIMENTAL DOSE: 1.12 and 3.36 kg/ha; amine and ester
APPLICATION METHODS: Postemergence spray; 187 l./ha; 0.3% X-77 surfactant
EXPERIMENTAL CONDITIONS: Field study; soil--Valentine fine sand; time period--1970 to 1973; multiple and split annual applications
EFFECTS: Moderate control of weeds at higher rate but only after two annual applications
COMMENTS: Herbicides most effective for control of broadleaf weeds when applied in 3 consecutive years or in alternate years; herbicides applied only once did not effectively control broadleaf weeds.
REFERENCE: Morrow, L.A. and M.K. McCarty, "Control of Green Sagewort in the Nebraska Sandhills," Weed Sci. 23(6):465-469 (1975).

<2345>
CHEMICAL NAME: Ethanol, 2-(2,4-dichlorophenoxy)-, hydrogen sulfate, sodium salt
CHEMICAL COMMON NAME: Sesone
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preplant non-incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: At 1.0 lb/A, moderate control of grasses and effective control of broadleaf weeds with sligth damage of cotton and corn and no damage of soybean
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but fairly safe on corn; MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(isopropylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<2346>
CHEMICAL NAME: Ethanol, 2-(2,4-dichlorophenoxy)-, hydrogen sulfate, sodium salt
CHEMICAL COMMON NAME: Sesone
PLANT: Pine, red (PINUS RESINOSA); Purslane, common (PORTULACA OLERACEA); Carpetweed (MOLLUGO VERTICILLATA); Weeds
EXPERIMENTAL DOSE: 1.8 and 3.6 lb/A
APPLICATION METHODS: Postemergence spray--one quart to each plot
EXPERIMENTAL CONDITIONS: Pine stock--spring 1960 germination (1-0 stock), spring 1959 germination (2-0 stock), and spring 1958 germination (2-1 stock); randomized complete block design, 4 by 2.7 ft plots; field studies; Plainfield sand soil
EFFECTS: 1-0 stock--no significant effect on weeds, significant reduction in seedling dry weight at both rates and in seedling survival at 3.6 lb/A; 2-0 stock--no significant effect in dry weight of seedlings from control; 2-1 stock--no significant effects on weeds or in dry weight of seedlings
COMMENTS: Weed infestation slight; weeds not tabulated separately
REFERENCE: Winget, C.H., T.T. Kozlowski, and J.E. Kuntz, "Effects of Herbicides on Red Pine Nursery Stock," Weeds 11(2):87-90 (1963).

<2347>
CHEMICAL NAME: Ethanol, 2-(2,4-dichlorophenoxy)-, hydrogen sulfate, sodium salt
CHEMICAL COMMON NAME: Sesone
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Weeds; Foxtail (SETARIA sp.); Crabgrass (DIGITARIA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Dandelion (TARAXACUM OFFICINALE); Purslane, common (PORTULACA OLERACEA); Pigweed, prostrate (AMARANTHUS GRAECIZANS); Medick, black (MEDICAGO LUPULINA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.8 and 3.6 lb/A
APPLICATION METHODS: Postplanting treatments in June and July
EXPERIMENTAL CONDITIONS: Field study; plants transplanted from containers to field; 3 X 8 ft replicated plots; herbicide applied June 14 and July 20
EFFECTS: 1.8 lb/A--83.7 weeds/6 sq ft on July 13 and 154.7 weeds/6 sq ft on September 1; 3.6 lb/A--55.7 weeds/6 sq ft on July 13 and 168.3 weeds/6 sq ft on September 1; check--164 and 228.3 weeds/6 sq ft on July 13 and September 1, respectively; no indication of chrysanthemum injury
COMMENTS: Weed species considered together for tabulations; weed control rated highly significant
REFERENCE: Stadtherr, R.J. and R.E. Widmer, "Chemical Weed Control in Garden Chrysanthemums," Weeds 7(1):82-87 (1956).

<2348>
CHEMICAL NAME: Ethanol, 2-(2,4-dichlorophenoxy)-, hydrogen sulfate, sodium salt
CHEMICAL COMMON NAME: Crag herbicide 1
PLANT: Potato (SOLANUM TUBEROSUM); Wartcress (CORONOPUS DIDYMUS)
EXPERIMENTAL DOSE: 0.62, 1.25, 1.87, 2.5, and 5.0 lb/A
APPLICATION METHODS: Postemergence and preemergence
EXPERIMENTAL CONDITIONS: 2-year field test; postemergence and preemergence treatment to same area first year but only preemergence treatment second year; first year, 2.5 and 5.0 lb/A used; second year, 0.62, 1.25, 1.87, and 2.5 lb/A used
EFFECTS: Lowest dose applied preemergence controlled wartcress until harvest; no significant differences in potato yield
COMMENTS: No advantage to using high dose (5 lb/A)
REFERENCE: Prasad, L.K., C.P. Sinha, and S.K. Mukherjee, "Preliminary Studies on Weed Control in Rabi Potato Grown in River Sand by Crag Herbicide I," Sci. Cult. 25(12):688-690 (1960).

<2349>
CHEMICAL NAME: Ethanol, 2-(2,4-dichlorophenoxy)-, hydrogen sulfate, sodium salt
CHEMICAL COMMON NAME: Crag Herbicide 1
PLANT: Rice (ORYZA SATIVA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 0.5 to 1.5 oz/gal
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control with no adverse effect on rice
COMMENTS: Control of most of annual weeds in paddy fields possible without serious crop-injury usually associated with other 2,4-D and MCPA formulations
REFERENCE: George, K., "Chemical Control of Weeds in the Paddy Fields of West Bengal," Bose Res. Instit. 21:9-16 (1956).

<2350>
CHEMICAL NAME: Ethanol, 2-(2,4-dichlorophenoxy)-, hydrogen sulfate, sodium salt
CHEMICAL COMMON NAME: Sesone
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 3.0 and 6.0 lb/A
APPLICATION METHODS: Postplanting spray; 30 gal/A at 30 lb/sq in
EXPERIMENTAL CONDITIONS: Field study; soil--Stoy silt loam; application one week after planting in winter; time period--1961 and 1962
EFFECTS: Slight weed control
COMMENTS: Effective weed control, lasting until June of following year obtained with atrazine, CIPC, kloben, simazine, lorox, ametryne, and prometryne; atrazine, kloben and simazine gave nearly 100% control; atrazine caused plant injury with more dead plants in treated plots than in control planting; simazine and kloben safer materials
REFERENCE: Sherwood, L.V. and H.R. Kemmerer, "The Influence of Winter Applied Preemergence Herbicides on Weed Growth among Woody Ornamental Plants," Am. Soc. Hort. Sci. 85:657-662 (1964).

<2351>
CHEMICAL NAME: Ethanol, 2-(2,4-dichlorophenoxy)-, hydrogen sulfate, sodium salt
CHEMICAL COMMON NAME: Sesone
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 35 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; soil -- Tifton sandy loam; time period -- 1959 and 1960
EFFECTS: Moderate weed control with no adverse effect on peanut
COMMENTS: Certain mixtures, which contained sesone, 2,1-DEP, or amiben mixed with DNBP, gave seasonal weed control on band-treated peanuts; compared to herbicides applied singly, mixtures not only increased spectrum of weeds controlled but also permitted use of lowest rate of each component on weeds for which it was most effective
REFERENCE: Hauser, E.W., W.C. Shaw, H.F. Harrison, and S.A. Parham, "Herbicides and Herbicide Mixtures for Weed Control in Peanuts," Weeds 10(2):139-144 (1962).

<2352>
<2352>
CHEMICAL NAME: Ethanol, 2-(2,4,5-trichlorophenoxy)-, hydrogen sulfate, sodium salt
CHEMICAL COMMON NAME: 2,4,5-TES
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Weeds; Foxtail (SETARIA sp.); Crabgrass (DIGITARIA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Dandelion (TARAXACUM OFFICINALE); Purslane, common (PORTULACA OLERACEA); Pigweed, prostrate (AMARANTHUS GRAECIZANS); Medick, black (MEDICAGO LUPULINA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.7 lb/A
APPLICATION METHODS: Postplanting treatments in June and July
EXPERIMENTAL CONDITIONS: Field study; plants transplanted from containers to field; 3 X 8 ft replicated plots; herbicide applied June 14 and July 20
EFFECTS: Weeds per 6 sq ft on July 13 equalled 107 and on September 1, 67.7; check plot had 164 weeds per 6 sq ft on July 13 and 228.3 weeds per 6 sq ft on September 1; no indication of chrysanthemum injury
COMMENTS: Weed species considered together for tabulations; weed control rated highly significant
REFERENCE: Stadtherr, R.J. and R.E. Widmer, "Chemical Weed Control in Garden Chrysanthemums," Weeds 7(1):82-87 (1956).

<2353>
CHEMICAL NAME: Ethanol, 2-amino-
CHEMICAL COMMON NAME: Ethanolamine
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:2000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2354>
CHEMICAL NAME: Ethanol, 2-chloro-
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1,000 to 25,000 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<2355>
CHEMICAL NAME: Ethanol, 2-chloro-2-(2-methylphenoxy)-, hydrogen sulfate
CHEMICAL COMMON NAME: Crag
PLANT: Carrot (DAUCUS CAROTA); Goosefoot, nettle (CHENOPODIUM MURALE); Purslane (PORTULACA EGYPTIACA)
EXPERIMENTAL DOSE: 2 kg/A
APPLICATION METHODS: Before and after irrigation in 100 gpa water
EXPERIMENTAL CONDITIONS: Four treatments, 2 at each rate, 1 before and 1 after irrigation
EFFECTS: Purslane not affected; minor growth reduction of nettle goosefoot; 2 kg/A caused malformation to carrot roots
COMMENTS: Not recommended for weed control in carrots
REFERENCE: Darhoose, S., "Weed Control in Carrots," Agric. Res. Rev. 36:515-527 (1958).

<2356>
CHEMICAL NAME: Ethanol, 2-hydrazino-
CHEMICAL COMMON NAME: BOH
PLANT: Jimsonweed (DATURA STRAMONIUM)
EXPERIMENTAL DOSE: 0.0001, 0.01, and 1.0%
EXPERIMENTAL CONDITIONS: Greenhouse study; temperatures--85 F (night) and 95 F (day)
EFFECTS: Reduced growth at 1.0%; reduced alkaloid content at 0.01 and 0.01% but increased at 0.0001%
COMMENTS: BOH reduced height 54 per cent and total dry weight 67 per cent; malformations induced and formation of flowers inhibited; concentration of leaf-top alkaloid decreased 45 per cent, while root alkaloid increased 61 per cent
REFERENCE: Sciuchetti, L.A. and G.K. Nielsen, "Effects of beta-Hydroxyethylhydrazine on Growth and Alkaloid Formation of DATURA STRAMONIUM," J. Pharm. Sci. 56(2):244-247 (1967).

<2357>
CHEMICAL NAME: Ethanol, 2-mercapto-
CHEMICAL COMMON NAME: Mercaptoethanol
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 to 10.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; pea leaf sections; radiotracer studies of alkane synthesis
EFFECTS: Inhibited alkane biosynthesis
COMMENTS: Dithioerythritol, dithiothreitol, and mercaptoethanol (but not glutathione or cysteine) specifically inhibited alkane biosynthesis in young pea leaf tissue, and at the same time elongated

<2357> CONT.
chains accumulate in wax ester and fatty aldehyde fractions; inhibition of C(31) alkane synthesis by DTE resulted in accumulation of C(32)
REFERENCE: Buckner, J.S. and P.E. Kolattukudy, "Specific Inhibition of Alkane Synthesis with Accumulation of Very Long Chain Compounds by Dithioerythritol, Dithiothreitol, and Mercaptoethanol in PISUM SATIVUM," Arch. Biochem. and Biophys. 156:34-45 (1973).

<2358>
CHEMICAL NAME: Ethanol, 2,2'-iminobis-
CHEMICAL COMMON NAME: Diethanolamine
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:2000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2359>
CHEMICAL NAME: Ethanol, 2,2',2"-nitrilotris-
CHEMICAL COMMON NAME: Triethanolamine
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:2000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2360>
CHEMICAL NAME: Ethanolamine, 2-sec-butyl-4,6-dinitrophenoldi-
CHEMICAL COMMON NAME: Dinitro
PLANT: Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 3% aqueous solution
APPLICATION METHODS: By volatilization
EXPERIMENTAL CONDITIONS: Controlled studies; treatment atmospheres formed inside 4 liter plastic bag--potted plants and test liquid in petri dishes; glasshouse grown at sunshine 21, 29, and 32 C and shade at 21, 27, and 29 C; sun evaluations after 4 hr, shade after 24 hr
EFFECTS: All plants killed
COMMENTS: Main emphasis of paper was mixture of neo-decanoic acids (NDA) not specifically defined; NDA used to dry onion tops for mechanical harvesting; dinitro used as toxic control; NDA thought safe for drying onions, no phytotoxicity
REFERENCE: Pendergrass, A., M.D. Gilbert, F.M.R. Isenberg, and D.J. Lisk, "Status of Neo-decanoic Acids applied to Onion (ALLIUM CEPA) Foliage and Phytotoxicity of Neo-decanoic Acids Applied to Organic Soil," J. Agric. Sci. 84:327-332 (1975).

<2361>
CHEMICAL NAME: Ethanone, 1-[4-(dipropylamino)-3,5-dinitrophenyl]
CHEMICAL COMMON NAME: Buban 37
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 2.24 and 4.48 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: Poor to moderate control of broadleaf weeds in preplant and transplant applications with effective control of grass at high rate; moderately severe phytotoxicity to tomatoes at higher rate in one experiment
COMMENTS: Metribuzin, napropamide, and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<2362>
<2362>
CHEMICAL NAME: Ethanone, 2-hydroxy-1-phenyl-
CHEMICAL COMMON NAME: Benzoylcarbinol
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2363>
CHEMICAL NAME: Ethenamine, 2-chloro-2-[(1,1-dimethylethyl)sulfonyl]-ethyl-N-nitroso-
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.4 ppth
APPLICATION METHODS: Dry seeds (12% water) immersed in aqueous solution of chemical with continuous stirring at 25 C for 8 hr
EXPERIMENTAL CONDITIONS: After treatment, seeds washed in running tap water (1 min) and sown in greenhouse; survivors later transplanted to field; tillering, sterility, seeds per ear, plantlets per spike, mutations on spike basis, and mutant plantlets studied
EFFECTS: Tillering and sterility same as control; 23.4 plantlets per spike compared to 30.0 for control; 2.5 mutant spikes compared to 0.04 for control and 0.6 mutant plantlets compared to 0.01 for control
COMMENTS: Tillering data based on 100 plants; sterility, seeds per ear, and plantlets per spike based on 100 spikes; mutations on basis of 1000 spikes; effects compared to gamma rays made
REFERENCE: Heslot, H., R. Ferrary, and J. Tempe, "The Relative Mutagenic Effects of Some Nitrosamines on Barley Seeds," Mutat. Res. 3:354-355 (1966).

<2364>
CHEMICAL NAME: Ethenamine, 2-chloro-2-[(1,1-dimethylethyl)sulfonyl]-N-methyl-nitroso-
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.4 ppth
APPLICATION METHODS: Dry seeds (12% water) immersed in aqueous solution of chemical with continuous stirring at 25 C for 8 hr
EXPERIMENTAL CONDITIONS: After treatment, seeds washed in running tap water (1 min) and sown in greenhouse; survivors later transplanted to field; tillering, sterility, seeds per ear, plantlets per spike, mutations on spike basis, and mutant plantlets studied
EFFECTS: Tillering similar to control; sterility--11.6 compared to 0.5 for control; 24.4 plantlets per spike compared to 30.0 for control; 6.3 mutant spikes compared to 0.04 for control and 1.1 mutant plantlets compared to 0.01 for control
COMMENTS: Tillering data based on 100 plants; sterility, seeds per ear, and plantlets per spike based on 100 spikes; mutations on basis of 1000 spikes; effects compared to gamma rays made
REFERENCE: Heslot, H., R. Ferrary, and J. Tempe, "The Relative Mutagenic Effects of Some Nitrosamines on Barley Seeds," Mutat. Res. 3:354-355 (1966).

<2365>
CHEMICAL NAME: Ethene
CHEMICAL COMMON NAME: Ethylene
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1000 ppm
APPLICATION METHODS: Fumigation; injection into sealed container containing plants; exposure for 1 to 24 hr prior to experiment; C(14) labled IAA used
EXPERIMENTAL CONDITIONS: Laboratory study; C(14)-labeled IAA; tissue sections (3.5 mm) incubated in water
EFFECTS: Increased growth of pea sections and reduced polar auxin transport capacity when plants grown in presence of ethylene
COMMENTS: Ethylene influenced growth of etiolated pea stem sections cut from untreated plants, but had no effect on indoleacetic acid uptake, polar transport or destruction; capacity of polar auxin transport system markedly reduced in sections cut from plants grown in ethylene, while velocity of auxin transport unchanged under these conditions; inhibition of polar transport system by ethylene could underlie certain responses in which the gas produces symptoms of auxin deficiency
REFERENCE: Burg, S.P. and E.A. Burg, "Inhibition of Polar Auxin Transport by Ethylene," Plant Physiol. 42(7):1224-1228 (1967).

<2366>
CHEMICAL NAME: Ethene
CHEMICAL COMMON NAME: Ethylene
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Pea, sweet (PISUM SATIVUM); Orchid, hybrid white (CATTLEYA sp.)
EXPERIMENTAL DOSE: 0.25 to 12.0 ppm
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Environmental chamber; pot culture; plants exposed to 0.2 to 15.0 microliters ethylene; etiolated peas grown in darkness; cotton and orchid grown in 21 to 27 C temperature; 62 to 68% RH, 16 hr photoperiod, and 1400 ft-c
EFFECTS: Reduced growth of pea, leaf abscission of cotton, and senescence of orchid flowers
COMMENTS: Ag applied as $AgNO_3$, (1) effectively blocked ability of exogenously applied ethylene to elicit classical "triple" response in intact etiolated peas; (2) stimulated leaf, flower, and fruit abscission in cotton; and (3) induced senescence of orchids
REFERENCE: Beyer, E.M., "A Potent Inhibitor of Ethylene Action in Plants," Plant Physiol. 58(3):268-271 (1976).

<2367>
CHEMICAL NAME: Ethene
CHEMICAL COMMON NAME: Ethylene
PLANT: Locust, honey (GLEDITSIA TRIACANTHOS); Violet, African (SAINTPAULA IONANTHA); Cucumber (CUCUMIS SATIVUS); Marigold, dwarf; Soybean (GLYCINE MAX); Bean, kidney (PHASEOLUS VULGARIS); Petunia, pink (PETUNIA sp.); Wheat (TRITICUM AESTIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1-60, 25, 50, 120 and 500 ppb
APPLICATION METHODS: Ambient air pollution (1-60 ppb) and growth chamber administered in air
EXPERIMENTAL CONDITIONS: Plants grown in 0.57m(3) Teflon plastic-covered chambers--airflow 0.57m(3)/min; one chamber fitted with KMnO(4) ethylene filter--airflow 0.28m(3)/min; 16 hr photoperiod, day temperature 24 C, night temperature 20 C; ethylene filter 75% effective; filtered air served as control
EFFECTS: Flower reduction proportional to concentration in violets, cucumbers, marigolds and soybean; reduction in fruits of soybean and kidney bean at all rates; other plants showed effects such as inhibition of stem elongation, inhibition of leaf expansion, promotion of senescence and abscission, induction of epinasty and reduction of flowering and fruit set
COMMENTS: Ethylene prevalent in automobile exhausts--primarily an urban air pollutant, downtown Washington D.C. levels as high as 700 ppb; threshold effects on plants start at 10 ppb; injury proportional to concentrations
REFERENCE: Abeles, F.B. and H.E. Heggestad, "Ethylene: An Urban Air Pollutant," J. Air Pollut. Contr. Assoc. 23(6):517-521 (1973).

<2368>
CHEMICAL NAME: Ethene
CHEMICAL COMMON NAME: Ethylene
PLANT: Tulip (TULIPA sp.)
EXPERIMENTAL DOSE: 0.05, 0.1, 0.5, 1.0, 3.0, 10 and 100 ppm
EXPERIMENTAL CONDITIONS: Tulip bulb stored at 13, 17, 20 and 23 C after harvesting; ethylene exposure at 2-week intervals during storage from mid-July until mid-November; 10 bulbs at each concentration examined for injury after storage, remainder of bulbs planted in greenhouse and effects assessed
EFFECTS: Dissected bulbs showed damage ranging from stamen damage to wilting of leaves and all floral organs; damage to mature plants partly traced to bulb damage and partly to desiccation; injury was greatest at higher storage temperatures--1 ppm caused moderate injury at 23 C but no injury at 17 and 13 C, 10 ppm caused severe injury at 23 C, slight injury at 17 C and no injury at 13 C, 100 ppm caused only very minor injury at 13 C
COMMENTS: Responses vary with cultivar; most important source during storage of exogenous ethylene is bulbs infected with FUSARIUM OXYSPORUM F. TULIPAE
REFERENCE: DeMunk, W.J., "Flower-Bud Blasting in Tulips Caused by Ethylene," Neth. J. Plant Pathol. 79:41-53 (1973).

<2369>
CHEMICAL NAME: Ethene
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.1 - 800,000 ppm
APPLICATION METHODS: Treatment to dividing cells of root tips
EFFECTS: 0.1-1000 ppm not antimitotic; 200,000 ppm in air and 800,000 ppm in oxygen reduced mitotic index 40-50% at 8 hr in secondary root tips and at 24 and 48 hr in primary root tips
REFERENCE: Powell, J.N., C.J. Grant, S.M. Robinson, and S.P. Radford, "Comparison of the Effects of Halothane and Ethylene on Cell Division," Br. J. Anaesth. 44(6):622-623 (1972).

<2370>
CHEMICAL NAME: Ethene
CHEMICAL COMMON NAME: Ethylene
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 10.0 ppm (4 ml of 1:20 v/v in air)
APPLICATION METHODS: Exposure to ethylene gas in closed container
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated pea stems
EFFECTS: Inhibited incorporation of C(14) into phospholipids
COMMENTS: After 2-3 hr treatment with ethylene, incorporation decreased by 50%; remained at this value for as long as ethylene supplied (8 hr); handling plants also caused a temporary decrease in incorporation; attributed to production of endogenous 'wound' ethylene
REFERENCE: Irvine, R.F. and D.J. Osborne, "The Effect of Ethylene on [1-(14)C] Glycerol Incorporation into Phospholipids of Etiolated Pea Stems," Biochem. J. 136:1133-1135 (1973).

<2371>
CHEMICAL NAME: Ether, allylpentachlorophenyl
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 250 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: Toxicity rating of 4
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<2372>
<2372>
CHEMICAL NAME: Ether, methylpentachlorophenol
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 1000 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: No phytotoxicity
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<2373>
CHEMICAL NAME: Ether, n-butylpentachlorophenol
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 1000 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: Toxicity rating of 1
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<2374>
CHEMICAL NAME: Ether, n-hexylpentachlorophenol
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 1000 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: Toxicity rating of 2
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<2375>
CHEMICAL NAME: Ether, propylpentachlorophenol
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 2000 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: No phytotoxicity
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<2376>
CHEMICAL NAME: Ether, tetrahydrofurfurylpentachlorophenyl
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 1000 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: Toxicity rating of 1
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<2377>
CHEMICAL NAME: Ethylene oxide, alkylphenol-
CHEMICAL COMMON NAME: Oronite NI-W
PLANT: Lychee (LITCHI CHINENSIS)
EXPERIMENTAL DOSE: 1:500 and 1:1000
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Local chlorosis at leaf tip
COMMENTS: Lychee leaves susceptible to ionic and nonionic surfactants; injury due to wetting agents ranged from complete necrosis of leaves to chlorosis and mottling and premature leaf fall
REFERENCE: Nakata, S. and Y. Tanada, "Phytotoxicity of Wetting Agents on Lychee," J. Econ. Ent. 54(6):1074-1076 (1961).

<2378>
CHEMICAL NAME: Ethyleneimine, 2-ethyl-2-phenyl-
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 3000, 5000, and 7000 ppm
APPLICATION METHODS: Seed soak for 5 to 7 hr ; EC formulation
EXPERIMENTAL CONDITIONS: Field study; exposure solution PH--75; exposure temperature--23 to 25 C
EFFECTS: At 700 ppm, drastic reduction in seed germination and death of most plants that grew
COMMENTS: Drastic lethal effect found to occur when highest concentration (7000 ppm) used
REFERENCE: Bose, S., :Mutagenic Action of 2-ethyl-2-phenyl-ethyleneimine," Experientia 21:506-507 (1965).

<2379>
CHEMICAL NAME: Ethylenimin
PLANT: ATROPA BELLADONNA
EXPERIMENTAL DOSE: 0.025 and 0.05%
APPLICATION METHODS: Seed treatment with 20 ml solution for 16 hrs at 18 plus or minus 2 C
EXPERIMENTAL CONDITIONS: Solution prepared in phosphate buffer, pH adjusted to 6.2; 200 seeds treated in conical glass flasks; seeds washed and planted after treatment; 3 months later, seeds transplanted; M(1) and M(2) plants selfed; several morphological characteristics and alkaloid content studied
EFFECTS: Significant increase in plant height, tiller number, leaf length, leaf number, leaf width, and alkaloids content; variability in alkaloid content compared to control
REFERENCE: Kaul, B.L. and D.K. Choudhary, "The Effect of Chemical Mutagens on Quantitative Characters in ATROPA BELLADONNA," Planta Med. 27(4):337-342 (1975).

<2380>
CHEMICAL NAME: Extar A
CHEMICAL COMMON NAME: Extar A
PLANT: Spurrey, corn (SPERGULA ARVENSIS); Sorrel, wood (OXALIS LATIFOLIA)
EXPERIMENTAL DOSE: 8.0 lb/A
APPLICATION METHODS: Foliar spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of spurry and moderate control of wood sorrel
COMMENTS: Extar A and Triherbide MIX proved definitely better than others on SPERGULA ARVENSIS; were quick in action, while MCPA and mixture of sodium 2,4-D proved ineffective against this weed
REFERENCE: Narayanan, T.P. and D. Meenakshisundaram, "Studies on the Relative Efficacies of a Few Chemical Herbicides in the Control of SPERGULA ARVENSIS, L. and OXALIS LATIFOLIA HBEK., Two Important Weeds of the Nilgiris," Madras Agric. J. 45(1):1-6 (1958).

<2381>
CHEMICAL NAME: Fluchaluralin
CHEMICAL COMMON NAME: Fluchaluralin
PLANT: Cabbage (BRASSICA OLERACEA); Purslane, common (PORTULACA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pineappleweed (MATRICARIA MATRICARIODY)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplant incorporated; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; supplemental irrigation; crops direct seeded
EFFECTS: Moderate control of weeds with slight phytotoxicity to cabbage
COMMENTS: Outstanding candidates for selectivity in seeded cabbage and control of barnyardgrass, purslane, and pineappleweed were H2223α and oryzalin; alachlor also gave excellent control but initial stunting of cabbage seedlings; by end of the season, phytotoxicity not visible with alachlor or any other treatment.
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicides for Weed Control in Sweet Corn and Cabbage," Proc. Northeast. Weed Sci. Soc. 31:256-260 (1977).

<2382>
CHEMICAL NAME: Fluoranthene
CHEMICAL COMMON NAME: Fluoranthene
PLANT: Velvetleaf (ABUTILON THEOPHRASTI); Morningglory (IPOMOEA sp.); Mustard (BRASSICA sp.)
EXPERIMENTAL DOSE: 10 lb/A (approx.)
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Laboratory study; varied uv intensity (310-400 nm)
EFFECTS: Death or severe damage to plants enhanced by exposure of plants to uv
COMMENTS: Effect of combination of fluoranthene and added UV light most lethal on morninglory; completely withered by 11 days after treatment initiated; severe chlorosis and withering also observed with velvetleaf and mustard plants
REFERENCE: Zweig, A. and G.W. Nachtigall, "Photosensitized Herbicidal Action," Photochem. and Photobiol. 22(6):257-259 (1975).

<2383>
CHEMICAL NAME: Fluorene-9-carboxylic acid, 2-chloro-9-hydroxy-9H-, methyl ester
CHEMICAL COMMON NAME: Chlorflurenol
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Postemergence spray (liquids) and drop-spreader granular formed; second application made if deemed necessary
EXPERIMENTAL CONDITIONS: Field study; evaluation time--4 mo with mowing at 5 to 8 day intervals
EFFECTS: Growth reduction with discoloration for 2 to 3 weeks, both temporary and resulting from a single application
COMMENTS: Proxazolon and MBR-12325 retarded growth more than the other materials; proxazolon slower acting than MBR-12325; EL-509 only material that did not significantly retard growth; 4 weeks after initial

<2383>
<2383> CONT.
application, turf that had been significantly reduced in growth, grew faster than untreated; all materials caused an unacceptable discoloration lasting for 2 to 3 weeks; lower rates tended to cause less discoloration, but growth suppression did not last as long as higher rates
REFERENCE: Watschke, T.L., "Growth Regulation of Kentucky Bluegrass With Several Growth Retardants," Agron. J. 68(1):787-791 (1976).

<2384>
CHEMICAL NAME: Fluorene-9-carboxylic acid, 2-chloro-9-hydroxy-9H-, methyl ester
CHEMICAL COMMON NAME: Maintain CF-125
PLANT: Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 1.12, 2.24, 4.5 and 6.7 kg/ha
APPLICATION METHODS: Application on established sod with a CO(2) sprayer in 336 l./ha water with 0.7% Aerosol OT surfactant (sulfosuccinic acid)
EXPERIMENTAL CONDITIONS: Spring field experiment on 15 year old sod; sod fertilized before treatment; 1.5 X 9.1 m plots in randomized complete block design with 4 replicates
EFFECTS: Significant reduction in height and dry matter yield after 37 and 61 days at all rates; significant color change after 40 days except at 1.12 kg/ha
COMMENTS: Possible use in managing highway roadbanks; greenhouse studies determined chemicals for field tests
REFERENCE: Elkins, D.M. and D.L. Suttner, "Chemical Regulation of Grass Growth. I. Field and Greenhouse Studies with Tall Fescue," Agron. J. 66:487-491 (1974).

<2385>
CHEMICAL NAME: Fluorene-9-carboxylic acid, 2-chloro-9-hydroxy-9H-, methyl ester
CHEMICAL COMMON NAME: Maintain CF-125
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 2.24 and 4.5 kg/ha
APPLICATION METHODS: Postemergence sprays applied with CO(2) sprayer in 356 l./ha water containing 0.7% Aerosol OT surfactant
EXPERIMENTAL CONDITIONS: Field experiments; fall trials; randomized complete block design with 4 replications; plots--1.5 X 9.0 m
EFFECTS: Significant reduction in height and significant color change after 22 days at both rates
COMMENTS: Greenhouse experiments determined chemicals used in field tests; not recommended for lawn use
REFERENCE: Elkins, D.M., J.A. Tweedy, and D.L. Suttner, "Chemical Regulation of Grass Growth. II. Greenhouse and Field Studies with Intensively Managed Turfgrasses," Agron. J. 66:492-497 (1974).

<2386>
CHEMICAL NAME: Fluorene-9-carboxylic acid, 2-chloro-9-hydroxy-9H-, methyl ester
CHEMICAL COMMON NAME: Morphactin
PLANT: Bladderwort (UTRICULARIA NIFLEXA)
EXPERIMENTAL DOSE: 5, 10, and 20 mg/l.
APPLICATION METHODS: Addition to nutrient solution
EXPERIMENTAL CONDITIONS: Laboratory study; IN VITRO culture of shoot tips of U. INFLEXA in glass tubes or flasks containing White's nutrient medium; incubation temperature--28 C; photoperiod--18 hr; evaluation time--up to 10 wk
EFFECTS: Death at 20 mg/l. with reduced growth and suppressed flowering at lower concentrations
COMMENTS: MEPA showed strong herbicidal effect and killed plants; AMO-1618 and coumarin inhibited apical as well as lateral bud growth; These three compouds and ABA, kinetin, BA, and zeatin unable to promote flowering under non-inductive conditions; BA stimulated growth in both long and short days; even in the latter conditions AMO-1618 and coumarin totally inhibited flowering, whereas ABA, kinetin and BA permitted 80-100 per cent of the cultures to flower; zeatin lowered the percentage of flowering cultures
REFERENCE: Ram, H.Y.M., H. Harada, and J.P. Nitsch, "Studies on Growth and Flowering in Axenic Cultures of Insectivorous Plants. III. Effects of Photoperiod, Ethrel, Morphactin and a Few Other Growth Substances and Metabolic Inhibitors on UTRICULARIA INFLEXA," Z. Pflanzenphysiol. Bd. 68(5):235-253 (1972).

<2387>
CHEMICAL NAME: Fluorene-9-carboxylic acid, 2-chloro-9-hydroxy-9H-, methyl ester
CHEMICAL COMMON NAME: Chlorflurenol
PLANT: Iceplant (CARPOBROTUS EDULE)
EXPERIMENTAL DOSE: 300 ppm
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: 300 ppm most effective concentration for retarding growth of iceplant without injuring plant
COMMENTS: Chlorflurenol most effective of seven growth regulators evaluated
REFERENCE: Hield, H. and S. Hemstreet, "Border Growth Control of Iceplant with Chloroflurenol Sprays," Hort. Sci. 9(5):474-475 (1974).

<2388>
CHEMICAL NAME: Fluorene-9-carboxylic acid, 2-chloro-9-hydroxy-9H-, methyl ester
CHEMICAL COMMON NAME: Chlorflurenol
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 40 and 80 g/ha (100 and 200 ppm, respectively)
APPLICATION METHODS: Foliage spray, 400 l./ha
EXPERIMENTAL CONDITIONS: Tubers planted in pots, shoots emerged in 7-8 days; spraying after shoot establishment; pots placed in randomized blocks
EFFECTS: No significant control
COMMENTS: Methyl ester formulation
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<2389>
CHEMICAL NAME: Fluorene-9-carboxylic acid, 2-chloro-9-hydroxy-9H-, methyl ester
CHEMICAL COMMON NAME: Chlorflurenol
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 40.0 g/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha; 0.5% Biofilm added
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: No adverse effects observed
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<2390>
CHEMICAL NAME: Fluorene-9-carboxylic acid, 2-chloro-9-hydroxy-9H-, methyl ester
CHEMICAL COMMON NAME: Chlorflurenol
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 80.0 g/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl-bromide-fumigated soil (Maverly loam); evaluation time--37 and 41 days; tubers recovered and weighed or replanted in vermiculite for further study
EFFECTS: Increased tuber germination; no adverse effects observed
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<2391>
CHEMICAL NAME: Fluorene-9-carboxylic acid, 2-chloro-9-hydroxy-9H-methyl ester
CHEMICAL COMMON NAME: Chlorflurecol-methyl
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Promoted tuber sprouting
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<2392>
CHEMICAL NAME: Fluorene-9-carboxylic acid, 9-hydroxy-9H-
CHEMICAL COMMON NAME: Flurecol
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS);Bermudagrass, common (CYNODON DACTYLON);Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 0.12,1.25,12.5, and 125.0 ppm
APPLICATION METHODS: 5 sec immersion of intact plant in test solution
EXPERIMENTAL CONDITIONS: Greenhouse container culture; soil--Newe Yaar clay; evaluation time--4 and 6 wk
EFFECTS: Increased growth of shoots of all test plants at one or more lowest concentrations; inhibition of bermudagrass (125 ppm) and nutsedge (12.5 and 125 ppm)
COMMENTS: Effects varied from stimulation to inhibition of aerial growth, increases in shoot number, and kill of plants
REFERENCE: Horowitz, M., "Effect of Growth Regulators on CYNODON DACTYLON (L.) Pers., SORGHUM HALEPENSE (L.) Pers., and CYPERUS ROTUNDUS L.," Weed Res. 12(1):11-20 (1972).

<2393>
<2393>
CHEMICAL NAME: Fluoride
CHEMICAL COMMON NAME: Fluoride
PLANT: Pine, Western white (PINUS MONTICOLA); Pine, lodgepole (PINUS CONTORTA)
EXPERIMENTAL DOSE: 10-600 ppm
APPLICATION METHODS: Ambient air pollution from aluminum plant emissions
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Necrosis of pine needles found where concentration of fluoride equalled or exceeded 30 ppm
COMMENTS: Fluoride emissions reduced by 67 percent between 1970 and 1971; data collected in 1971 indicated vegetation in Glacier National Park, 7 air miles distant from source, still accumulating abnormal amounts of fluoride
REFERENCE: Carlson, C.E., "Fluoride Pollution in Montana," Fluoride 6(3):127-137 (1973).

<2394>
CHEMICAL NAME: Fluromidine
CHEMICAL COMMON NAME: Floromidine
PLANT: Corn (ZEA MAYS); Chickweed, common (STELLARIA MEDIA); Speedwell (VERONICA sp.); Knotweed (POLYGONUM AVICULARE); Fool's parsley (AETHUSA CYNAPIUM)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Preemergence and postemergence applications with an Oxford Precision Sprayer at 2.11 kg/cm(2) pressure and 225 l./ha volume
EXPERIMENTAL CONDITIONS: Maize sown in plots of 3 rows, 3.7 m long and 61 cm apart; Oxford clay soil; hand weeded controls; weeds assessed in June for preemergence applications made on May 2 and 3 weeks after foliar treatment for postemergence applications; preemergence experiments made under wet conditions
EFFECTS: Preemergence--excellent control of all plants (99% or better) at both rates; postemergence--100% control of all plants but knotweed at both rates, 1.12 kg/ha gave 40% and 2.24 kg/ha gave 82% knotweed control; no significant maize yield reduction
COMMENTS: Postemergence applications generally less effective than preemergence treatments; results also given of effectiveness of herbicide combinations
REFERENCE: Ludwig, J.W., "The Use of a Low Dose of Atrazine Alone and in Mixtures with Other Herbicides in the Maize Crop," Weed Res. 13:12-18 (1973).

<2395>
CHEMICAL NAME: Formaldehyde
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 0.05, 0.1, 0.5, and 1.0M
APPLICATION METHODS: Injection of 300ml fluid of test solution
EXPERIMENTAL CONDITIONS: Two 3-year old peach trees; injection holes drilled 30cm above soil line; trees injected while dormant, at bud swell stage, and at full leaf stage
EFFECTS: Leaf burn and branch killing persisting throughout treatment year; foliation delayed when injections made before bud swell
COMMENTS: Tree growth less than trees treated with dimethyl sulfoxide; effect on peach mosaic virus (strain PM-4) and necrotic ringspot virus also investigated
REFERENCE: Pine, T.S., "Reactions of Peach Trees and Peach Tree Viruses to Treatment with Dimethyl Sulfoxide and Other Chemicals," Phytopathology 57: 671-673 (1967).

<2396>
CHEMICAL NAME: Formaldehyde
CHEMICAL COMMON NAME: Formaldehyde
PLANT: Lily (LILIUM LONGIFLORUM)
EXPERIMENTAL DOSE: 0.37, 1.40, and 2.40 ppm
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Fumigation chamber; incubation at 28 C
EFFECTS: After 5 min exposure only, total reduction in pollen viability at 1.40 and 2.40 ppm; reduced pollen tube length at other concentrations/exposures
COMMENTS: Marked inhibition of tube elongation occurred with two combinations of two gases and moderate inhibition occurred with three combinations of two gases; major atmospheric pollutants such as SO(2), NO(2), and O(3) may enhance each other's phytotoxicity; aldehydes may be synergistic in their effects on plants
REFERENCE: Masaru, N., F. Syozo, and K. Saburo, "Effects of Exposure to Various Injurious Gases on Germination of Lily Pollen," Environ. Pollut. 11(3):181-187 (1976).

<2397>
CHEMICAL NAME: Formamide, N-butyl-N-ethyl-1-(propylsulfinyl)
CHEMICAL COMMON NAME: Pebulate sulfoxide
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Mustard, Chinese (BRASSICA JUNCEA); Dock, curly (RUMEX CRISPUS); Oat (AVENA SATIVA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Barley (HORDEUM VULGARE); Foxtail, giant (SETARIA FABERI); Corn (ZEA MAYS); Beet, sugar (BETA VULGARIS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.5 and 3.4 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments; broadleaves at 0.5 kg/ha--A. RETROFLEXUS, B. JUNCEA, and R. CRISPUS; grasses at 0.5 kg/ha--A. SATIVA, D. SANGUINALIS, E. CRUSGALLI, H. VULGARE, and S. FABERII
EXPERIMENTAL CONDITIONS: Loamy sand soil; greenhouse tests; thiocarbamates and their sulfoxide derivatives tested
EFFECTS: 63 and 72% broadleaf weed and grass injury, respectively; 0, 10, and 30% corn, sugarbeet, and tomato injury, respectively at 3.4 kg/ha
COMMENTS: Weed control better than from parent compound; corn injury less but sugarbeet and tomato injury greater than from parent; weeds tabulated as broadleaves and grasses
REFERENCE: Casida, J.E., E.C. Kimmel, M. Lay, H. Ohkawa, J.E. Rodebush, R.A. Gray, C.K. Tseng, and H. Tilles, "Thocarbamate Sulfoxide Herbicides," Pesticides 3:675-679 (1974).

<2398>
CHEMICAL NAME: Formamide, N,N-dimethyl-
CHEMICAL COMMON NAME: Dimethyl formamide
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100%
APPLICATION METHODS: Seed soak
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; seeds soaked for 24 or 44 hr then placed on filter paper contained in petri plates; solvents removed by vacuum drying
EFFECTS: After 24-hr soak, nearly total suppression of germination
COMMENTS: Anhydrous dichloromethane had no effect on germination or on uptake of oxygen when lettuce seeds treated for up to 24 hours; in contrast, anhydrous acetone distinctly depressed uptake of oxygen; when coumarin applied together with dichloromethane, germination and uptake of oxygen inhibited
REFERENCE: Meyer, H. and A. M. Mayer, "Permeation of Dry Seeds With Chemicals: Use of Dichloromethane," Science 171:583-584 (1971).

<2399>
CHEMICAL NAME: Formamide, N,N-dipropyl-1-(propylsulfinyl)-
CHEMICAL COMMON NAME: Vernolate sulfoxide
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Mustard, Chinese (BRASSICA JUNCEA); Dock, curly (RUMEX CRISPUS); Oat (AVENA SATIVA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Barley (HORDEUM VULGARE); Foxtail, giant (SETARIA FABERI); Corn (ZEA MAYS); Beet, sugar (BETA VULGARIS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5 and 3.4 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments; broadleaves at 0.5 kg/ha--A. RETROFLEXUS, B. JUNCEA, and R. CRISPUS; grasses at 0.5 kg/ha--A. SATIVA, D. SANGUINALIS, E. CRUSGALLI, H. VULGARE, and S. FABERII
EXPERIMENTAL CONDITIONS: Loamy sand soil; greenhouse tests; thiocarbamates and their sulfoxide derivatives tested
EFFECTS: 95 and 90% broadleaf weed and grass injury, respectively; 0, 100, and 0% corn, beet, and soybean injury, respectiely at 3.4 kg/ha
COMMENTS: Broadleaf weed control better than that from parent compound, grass control same as from parent; corn and soybean injury less than from parent, beet injury same as from parent; weeds tabulated as broadleaves and grasses
REFERENCE: Casida, J.E., E.C. Kimmel, M. Lay, H. Ohkawa, J.E. Rodebush, R.A. Gray, C.K. Tseng, and H. Tilles, "Thocarbamate Sulfoxide Herbicides," Pesticides 3:675-679 (1974).

<2400>
CHEMICAL NAME: Formamide, 1-(ethylsulfinyl)-N,N-dipropyl-
CHEMICAL COMMON NAME: EPTC sulfoxide
PLANT: Corn (ZEA MAYS); Beet, sugar (BETA VULGARIS); Bean, snap (PHASEOLUS VULGARIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Mustard, Chinese (BRASSICA JUNCEA); Dock, curly (RUMEX CRISPUS); Oat (AVENA SATIVA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Barley (HORDEUM VULGARE); Foxtail, giant (SETARIA FABERI); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, great (AMBROSIA TRIFIDA); Lamb's-quarters (CHENOPODIUM ALBUM); Jimsomweed (DATURA STRAMONIUM); Morningglory, tall (IPOMOEA PURPUREA); Medick, black (MEDICAGO LUPULINA); Groundcherry (PHYSALIS LOBATA)
EXPERIMENTAL DOSE: 0.5, 1.7, 3.4, 6.4, and 27.0 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments; broadleaf weeds at 0.5 kg/ha--A. RETROFLEXUS, B. JUNCEA, and R. CRISPUS; grasses at 0.5 kg/ha--A. SATIVA, D. SANGUINALIS, E. CRUSGALLI, H. VULGARE, and S. FABREII; broadleaf weeds at 1.7 kg/ha--A. THEOPHRASTI, A. RETROFLEXUS, A. TRIFIDA, B. JUNCEA, C. ALBUM, D. STRAMONIUM, I. PURPUREA, M. LUPULINA, P. LOBATA, and R. CRISPUS
EXPERIMENTAL CONDITIONS: Loamy sand soil; greenhouse tests; thiocarbamates and their sulfoxide derivatives tested
EFFECTS: 90 and 98% broadleaf weed injury at 0.5 and 1.7 kg/ha respectively; 89% grass injury; no corn injury at 3.4, 6.4, or 27.0 kg/ha; no bean injury at 3.4 kg/ha; but 99% sugarbeet injury at 3.4 kg/ha
COMMENTS: Broadleaf weed control better than parent compound but grass control less than parent, corn and bean injury much less than parent, sugarbeet injury similar to injury from parent; weeds tabulated as broadleaves and grasses
REFERENCE: Casida, J.E., E.C. Kimmel, M. Lay, H. Ohkawa, J.E. Rodebush, R.A. Gray, C.K. Tseng, and H. Tilles, "Thocarbamate Sulfoxide Herbicides," Pesticides 3:675-679 (1974).

<2401>
CHEMICAL NAME: Formic acid
CHEMICAL COMMON NAME: Formic acid
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: Slight damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2402>
<2402>
CHEMICAL NAME: Fructose, 1,6-bis(dihydrogen phosphate)-
CHEMICAL COMMON NAME: Fructose-1,6-phosphate
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 240 micro g
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: Inhibited photosynthesis rate
COMMENTS: Leaf extracts along with purified fructose-1,6-phosphate inhibited C(14)O(2) fixation
REFERENCE: Springer-Lederer, H., A.M. El-Badry, H.C.J. Ottenheym, and J.A. Bassham, "Inhibition of Photosynthesis in Isolated Spinach Chloroplasts by Added Fructose-1,6-Diphosphatase," Biochem. Biophys. Acta, 189(B7):464-467 (1969).

<2403>
CHEMICAL NAME: Fuel oil
CHEMICAL COMMON NAME: Fuel oil
PLANT: Spinach (SPINACIA OLERACEA); Plants
EXPERIMENTAL DOSE: 18 gal/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; single and double spinach seeding rates and normal and delayed times
EFFECTS: Moderate weed control (delayed seeding) with no adverse effect on spinach
COMMENTS: No chemical increased yield of spinach; two chemicals in normal seeding plots and 5 chemicals in delayed seeding plots gave as good yield as untreated and significant increase in weed control
REFERENCE: Noll, C.J. and M.L. Odland, "Pre-Emergence Weeding of Spinach With Chemical Herbicides," Proc. N.E. Weed Cont. Conf. 5:115-117 (1951).

<2404>
CHEMICAL NAME: Furanone, 5-[(beta-D-glucopyranosyloxy)methyl]-2(5H)-, (S)-
CHEMICAL COMMON NAME: Ranunculin
PLANT: Cress (LEPIDIUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 to 100 ppm
APPLICATION METHODS: Addition to culture solution and to soil
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination and root growth studied
EFFECTS: Germination and growth reduction; slightly less active than coumarin
COMMENTS: Dual nature of phytocidal activity of coumarin; namely, inhibition of both germination and subsequent root-growth; with respect to inhibition of root-growth, one feature of activity of coumarin is similarity to action of 2,4-D and other phytocidal agents of heteroauxin class
REFERENCE: Audus, L.J. and J.H. Quastel, "Coumarin as a Selective Phytocidal Agent," Nature 159(4036):320-324 (1947).

<2405>
CHEMICAL NAME: Furanone, 5-methylene- 2(5H)-
CHEMICAL COMMON NAME: Protoanemonin
PLANT: Cress (LEPIDIUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 to 100 ppm
APPLICATION METHODS: Addition to culture solution and to soil
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination and root growth studied
EFFECTS: Germination and growth inhibition; more active than coumarin
COMMENTS: Dual nature of phytocidal activity of coumarin; namely, inhibition of both germination and subsequent root-growth; with respect to inhibition of root-growth, one feature of activity of coumarin is similarity to action of 2,4-D and other phytocidal agents of heteroauxin class
REFERENCE: Audus, L.J. and J.H. Quastel, "Coumarin as a Selective Phytocidal Agent," Nature 159(4036):320-324 (1947).

<2406>
CHEMICAL NAME: Furo-[2,3-F][2]benzopyran-2,8(3H)-dione, 5a-ethenyloctahydro-4-hydroxy-3,9-bis(methylene)-2H-, (3a alpha, 4 alpha, 5a alpha, 9a alpha, 9b beta)-(+)-
CHEMICAL COMMON NAME: Vernolepin
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 5 to 50 micrograms per milliliter
APPLICATION METHODS: 20-hr incubation in test solution
EXPERIMENTAL CONDITIONS: 4-mm portions of wheat coleoptiles soaked in 1 ug/ml solution of manganese sulfate dor 2 to 3 hr; vernolepin dissolved in 2% surcose and placed in vials containing wheat coleoptiles; inhibition calculated as percentage of control growth.
EFFECTS: 20% growth inhibition at 5 ug/ml, 40% inhibition of 25 ug/ml, 80% inhibition at 50 ug/ml
COMMENTS: Inhibited tissues normal in appearance, respiration not affected; washed coleoptile sections treated with indole-3-acetic acid showed growth stimulation--degree of elongation determined by length of prior treatment with vernalepin
REFERENCE: Sequeira, L., R.J. Hemingway, and S.M. Kupchan, "Vernolepin: A New, Reversible Plant Growth Inhibitor," Science 161:789-790 (1968).

<2407>
CHEMICAL NAME: Furol[3,2-c]pyran-2(6H)-one, 4-hydroxy-4H-
CHEMICAL COMMON NAME: Patulin
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 100 micro g/ml
APPLICATION METHODS: Injected into soil by means of hypodermic syringe
EXPERIMENTAL CONDITIONS: Environmental chamber; soil--Holdredge silt loam; pot culture
EFFECTS: Reduced growth, flowering, and yield of wheat
COMMENTS: Decreased internodal elongation, floret number, seed weight, and seed number observed; yields reduced according to proximity of application prior to heading
REFERENCE: Ellis, J.R. and T.M. McCalla, "Effects of Patulin and Method of Application on Growth Stages of Wheat", Appl. Microbiol. 25(4):562-566 (1973).

<2408>
CHEMICAL NAME: Furol[3,2-c]pyran-2(6H)-one, 4-hydroxy-4H-
CHEMICAL COMMON NAME: Patulin
PLANT: Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 0.1 to 1000 micro g/ml
APPLICATION METHODS: Immersion of root tips in test solutions for 30 hr
EXPERIMENTAL CONDITIONS: Laboratory study; germinating bulbs soaked 8 days then treated
EFFECTS: Reduced mitotic index especially in anaphase
COMMENTS: Most striking damage was reduction of mitotic index and metaphase arrest by all toxins; appearance of nuclei with two nucleoli as well as vacuolization of the cytoplasm under influence especially of diacetoxyscirpenol which proved to be most active toxin
REFERENCE: Reiss, J., "Mycotoxin Poisoning of ALLIUM CEPA Root Tips II. Reduction of Mitotic Index and Formation of Chromosomal Aberrations and Cytological Abnormalities by Patulin, Rubratoxin B and Diacetoxyscirpenol," Cytologia 40:703-708 (1975).

<2409>
CHEMICAL NAME: FUSARIUM toxin (T-2)
CHEMICAL COMMON NAME: T-2, toxin of FUSARIUM spp
PLANT: Pea, cow- (VIGNA SINENSIS)
EXPERIMENTAL DOSE: 1.0 to 100 ppm
APPLICATION METHODS: Immersion of intact plants in solutions for 10 or 20 min and transplanted
EXPERIMENTAL CONDITIONS: Greenhouse study; growth medium--silica sand
EFFECTS: Significantly reduced growth of pea seedlings for 10 or 20 min exposures
COMMENTS: FUSARIUM TRICINCTUM isolates which produced T-2 toxin caused severe wilt of pea seedlings within 30 hr, and complete necrosis with 72 hr after root immersion in aqueous suspensions prepared from agar cultures; isolates of F. TRICINCTUM and F. ROSEUM which did not produce T-2 toxin had no observable effect on pea seedlings
REFERENCE: Marasas, W.F.O., E.B. Smalley, J.R. Bamburg, and F.M. Strong, "Phytotoxicity of T-2 Toxin Produced by FUSARIUM TRICINCTUM," Phytopathology 61:1488-1491 (1971).

<2410>
CHEMICAL NAME: Fusicoccin
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.11 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSICOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2411>
CHEMICAL NAME: Fusicoccin
CHEMICAL COMMON NAME: Fusicoccin
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1, 10, and 100 ug/ml
APPLICATION METHODS: Treatment to tomato disks
EXPERIMENTAL CONDITIONS: Plant wilting studied
EFFECTS: Ability of cells to retain water impaired, high concentrations (10 and 100 ug/ml) elevated respiration rate and suppressed plant growth; 1 ug/ml and lower concentrations induced wilting
COMMENTS: Mechanism of impaired cellular water retention not known
REFERENCE: Chain, E., P.G. Mantle, and B.V. Milborrow, "Investigations on the Phytotoxicity of Fusioccins," Pages 395-397 in R.K.S. Wood, A. Ballio, and A. Granti, Phytotoxins in Plant Diseases (1972).

<2412>
<2412>
CHEMICAL NAME: Fusicoccin, allo-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.24 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2413>
CHEMICAL NAME: Fusicoccin, de-t-pentenyl-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 4.49 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2414>
CHEMICAL NAME: Fusicoccin, de-t-pentenylallo-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.82 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2415>
CHEMICAL NAME: Fusicoccin, de-t-pentenyliso-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 10.73 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2416>
CHEMICAL NAME: Fusicoccin, de-t-pentenyltriacetyl-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: Greater than 92 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2417>
CHEMICAL NAME: Fusicoccin, deacetyl-deisopentenyl-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5 ug/g fresh weight
APPLICATION METHODS: Treatment to tomato shoots
EXPERIMENTAL CONDITIONS: Plant wilting studied
EFFECTS: Wilted tissues
COMMENTS: Mechanism of impaired cellular water retention not known
REFERENCE: Chain, E., P.G. Mantle, and B.V. Milborrow, "Investigations on the Phytotoxicity of Fusioccins," Pages 395-397 in R.K.S. Wood, A. Ballio, and A. Granti, Phytotoxins in Plant Diseases (1972).

<2418>
CHEMICAL NAME: Fusicoccin, dihydro-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.10 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2419>
CHEMICAL NAME: Fusicoccin, dihydroallo-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.20 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2420>
CHEMICAL NAME: Fusicoccin, dihydroiso-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 2.64 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2421>
CHEMICAL NAME: Fusicoccin, iso-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 2.73 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2422>
CHEMICAL NAME: Fusicoccin, 12-O-acetyldideacetyl-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: Greater than 80 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2423>
CHEMICAL NAME: Fusicoccin, 12-O-acetyldideacetyldihydro-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 49.39 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2424>
<2424>
CHEMICAL NAME: Fusicoccin, 19-monodeacetyl-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 12.27 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2425>
CHEMICAL NAME: Fusicoccin, 19-monodeacetylallo-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 11.9 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2426>
CHEMICAL NAME: Fusicoccin, 19-monodeacetyldihydro-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 9.62 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2427>
CHEMICAL NAME: Fusicoccin, 19-monodeacetyldihydroallo-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 27.42 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2428>
CHEMICAL NAME: Fusicoccin, 19-monodeacetyldihydroiso-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 8.28 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2429>
CHEMICAL NAME: Fusicoccin, 19-monodeacetyliso-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 14.71 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2430>
CHEMICAL NAME: Fusicoccin, 3'-monodeacetyl-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 3.35 mg/kg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2431>
CHEMICAL NAME: Fusicoccin, 3'-monodeacetyldihydro-
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 2.96 mg fresh plant weight
APPLICATION METHODS: Leafed cuttings exposed to compound dose
EXPERIMENTAL CONDITIONS: Plants grown in growth room at 27 C and 70% relative humidity with 12 hr photoperiod; after 20 days leafed cuttings evaluated for phytotoxicity
EFFECTS: Undefined toxic effects observed
COMMENTS: Reported dose is concentration at which first symptoms of phototoxicity observed - minimal dose; FUSLCOCCUM AMYGDALI del. - Fungus, phatogen of peach and almond bud canker
REFERENCE: Ballio, A., A. Bottalico, M. Framondino, A. Graniti, and G. Randazzo, "Phytotoxicity of Minor Metabolites of FUSICOCCUM AMYGDALI Del. and Related Products," Phytopath. Medit. 12:22-29 (1973).

<2432>
CHEMICAL NAME: GA-2-611
CHEMICAL COMMON NAME: GA-2-611
PLANT: Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 2.5, 5.0, and 7.5 lb/A
APPLICATION METHODS: Postemergence; granular formulation (5%)
EXPERIMENTAL CONDITIONS: Experimental sites located on highway rights-of-way; fall treatments, spring evaluations; 100 sq ft treatment sites--1 sq ft subsample areas; number of seedheads counted; height of 3 representative plants measured and visual damage estimates made
EFFECTS: Number of seedheads and plant height reduced, greatest reduction at 7.5 lb/A; foliage injury at all rates, more pronounced at 7.5 lb/A (69% live foliage compared to control)
REFERENCE: Chappell, W.E., J.S. Coartney, and M.L. Link, "Plant Growth Regulators for Highway Maintenance," Proc. South. Weed Sci. Soc. 30:300-305 (1977).

<2433>
CHEMICAL NAME: Galactaric acid
CHEMICAL COMMON NAME: Mucic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2434>
CHEMICAL NAME: Galactaric acid
CHEMICAL COMMON NAME: Mucic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 3.2%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<2435>
CHEMICAL NAME: Galactopyranoside, (3 beta)-solanid-5-en-3-yl-0-6-deoxy-alpha-L-mannopyranosyl-(1-2)-0-[beta-D-glucopy ranosyl-(1-3)]-beta-D-
CHEMICAL COMMON NAME: Alpha-solanine
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Reduced growth of wheat with undefined effects in pea test
COMMENTS: Of 524 compounds examined, 71 were found highly active and a further 126 substances found

<2435>
<2435> CONT.
significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<2436>
CHEMICAL NAME: Gibb-3-ene-1,10-dicarboxylic acid, 2,4a,7-trihydroxy-1-methyl-8-methylene-, 1,4a-lactone (1 alpha, 2 beta, 4a alpha, 4b beta, 10 beta)
CHEMICAL COMMON NAME: GA
PLANT: Pea, scurf (PSORALEA CORYLIFORA)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Solutions applied to seed
EXPERIMENTAL CONDITIONS: Environmental chamber; seed germination in petri plates with filter paper; temperature--35 C; continuous light; scarification by abrasion and chemically; soaking in test solutions for 8 hr
EFFECTS: Reduced germination (at least 500%) at concentrations of 500 ppm and higher; 8 hr soak of scarified seed
COMMENTS: Inhibition of germination of acid-scarified pods increased with increase in concentration; inhibition irreversible and led to death of seed in pod; mortality, expressed as percentage of dead pods, highest for 2,4,5-T and IAA and lowest for GA.
REFERENCE: Shukla, S.P., "The Effects of Some Chemicals on the Germination of a Weed, PSORALEA CORYLIFOLIA L.," Weed Res. 12(4):293-300 (1972).

<2437>
CHEMICAL NAME: Gibb-3-ene-1,10-dicarboxylic acid, 2,4a,7-trihydroxy-1-methyl-8-methylene-, 1,4a-lactone (1 alpha, 2 beta, 4a alpha, 4b beta, 10 beta)
CHEMICAL COMMON NAME: GA
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 and 0.001 micro g; 0.05% Tween 20 and ethanol
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time -- up to 96 hr
EFFECTS: Stimulated growth
COMMENTS: Gibberellin and estrone gave identical growth effects; quantitative comparison of endogenous gibberellin contents in gibberellin and estrone treated plants showed clearly that when plants do not show any differences in growth rate, they are characterized simultaneously by very similar gibberellin contents
REFERENCE: Kopcewicz, J., "Influence of Estrone on Growth and Endogenous Gibberellins Content in Dwarf Pea," Bull. L'Academie Polonaise Des Sciences 17:727-731 (1969).

<2438>
CHEMICAL NAME: Gibb-3-ene-1,10-dicarboxylic acid, 2,4a,7-trihydroxy-1-methyl-8-methylene-, 1,4a-lactone (1 alpha, 2 beta, 4a alpha, 4b beta, 10 beta)
CHEMICAL COMMON NAME: GA
PLANT: Water fern (AZOLLA MEXICANA)
EXPERIMENTAL DOSE: 0.0001 to 100 mg/l; K salt
APPLICATION METHODS: Intact plants floating on surface of solutions of test chemicals in Hoagland's nutrient medium with weekly solution
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--three wk
EFFECTS: Inhibited vegetative fragmentation with increased growth at all lower concentrations; death at 100 mg/l
COMMENTS: GA inhibited natural fragmentation of water fern through prevention of or decrease in rate of senescence of older plant parts; fragmentation essentially prevented at concentration of 0.1 mg/l or higher in three-week period; inhibition of fragmentation accompanied by decreases in fresh and dry weight only at higher sub-lethal concentrations; IAA causes slight reduction in fragmentation at lower concentration but 10 mg/l increased fragmentations; fresh and dry weights not affected greatly below lethal 100 mg/l concentration
REFERENCE: Dusek, W.A. and E.K. Bonde, "Effects of Gibberellic Acid, Indoleacetic Acid, and Maleic Hydrazide on AZOLLA MEXICANA," Phyton 22(1):51-54 (1965).

<2439>
CHEMICAL NAME: Gibb-3-ene-1,10-dicarboxylic acid, 2,4a,7-trihydroxy-1-methyl-8-methylene-, 1,4a-lactone (1 alpha, 2 beta, 4a alpha, 4b beta, 10 beta)
CHEMICAL COMMON NAME: GA
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 15.0 mg/l.
APPLICATION METHODS: Immersion of wheat coleoptiles for up to 120 hr
EXPERIMENTAL CONDITIONS: Laboratory study; coleoptiles of different ages (up to 120 hr) studied
EFFECTS: Stimulation of template activity in younger seedlings and inhibition in older seedlings
COMMENTS: RNA synthesis occurs on template of chromatin isolated from wheat shoots and was inhibited by actinomycin D, RNase, and rifamycin; IAA and GA appear to have different effects on changes of template activity of chromatin in cells of different ages
REFERENCE: Likholat, T.V. and V.A. Pospelov, "The Influence of B-Indoleacetic Acid and Gibberellin on the Template Activity of the Chromatin of Wheat Coleoptiles of Different Ages," FEBS Letters 40(1):77-79 (1974).

<2440>
CHEMICAL NAME: Gibb-3-ene-1,10-dicarboxylic acid, 2,4a,7-trihydroxy-1-methyl-8-methylene-, 1,4a-lactone (1 alpha, 2 beta, 4a alpha, 4b beta, 10 beta)
CHEMICAL COMMON NAME: GA
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 5X10(-4)M; 5 ml
APPLICATION METHODS: Solution immersion
EXPERIMENTAL CONDITIONS: Laboratory study; sections of etiolated pea hypocotyls immersed in solutions; 250 mg/5 ml; evaluation time--24 hr; temperature--25C
EFFECTS: No effect on growth or respiration
COMMENTS: Activity of IAA in control series increased to same extent as fresh matter, i.e. by about 40%; Phosfon I and CCC decreased growth by about 50% and did not significantly increase activity of IAA; coumarin inhibited synthesis of enzyme; of growth stimulators tested, only gibberellic acid (GA-3) significantly decreased activity of IAA in CCC series
REFERENCE: Knypl, J.S. and A. Rennert, "Growth Inhibitors and the Indole-3-acetic Acid Oxidase Contents of Cucumber Hypocotyl Sections," Kurse 54:544 (1967).

<2441>
CHEMICAL NAME: Gibb-3-ene-1,10-dicarboxylic acid, 2,4a,7-trihydroxy-1-methyl-8-methylene-, 1,4a-lactone (1 alpha, 2 beta, 4a alpha, 4b beta, 10 beta)
CHEMICAL COMMON NAME: GA
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 1x10(-4)M
APPLICATION METHODS: Solution soak of seed
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--21 to 23 C; light intensity--200 ft c; evaluation time--1, 3, and 5 da
EFFECTS: Stimulated seedling growth (principally of hypocotyl)
COMMENTS: Germination of lettuce seeds inhibited by 2-thiouracil up to 24 hours; inhibition reversed by RNA precursors only; seedling growth of lettuce inhibited by 2-thiouracil and 5-fluorouracil; while effect of 2-thiouracil counteracted by RNA precursors, inhibition due to 5-fluorouracil not reversed significantly by any nucleic acid precursors
REFERENCE: Khan, A.A., "Inhibition of Lettuce Seed Germination and Seedling Growth by Antimetabolites of Nucleic Acids, and Reversal by Nucleic Acid Precursors and Gibberelic Acid," Planta (Berl.) 68:83-87 (1966).

<2442>
CHEMICAL NAME: Gibb-3-ene-1,10-dicarboxylic acid, 2,4a,7-trihydroxy-1-methyl-8-methylene-, 1,4a-lactone (1 alpha, 2 beta, 4a alpha, 4b beta, 10 beta)
CHEMICAL COMMON NAME: GA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0 to 100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Increased depth of basal bulb
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<2443>
CHEMICAL NAME: Gibb-3-ene-1,10-dicarboxylic acid, 2,4a,7-trihydroxy-1-methyl-8-methylene-, 1,4a-lactone (1 alpha, 2 beta, 4a alpha, 4b beta, 10 beta)
CHEMICAL COMMON NAME: GA
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 5x10(-8)M
APPLICATION METHODS: Addition to seed homogenates
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Stimulated alpha-amylase activity
COMMENTS: HCG inhibited alpha-amylase production in intact germinating grains by 50%
REFERENCE: Duffus, C.M., J.H. Duffus, and A.H. Orr, "Inhibition of Gibberellic Acid Biosynthesis by Chorionic Gonadotrophin during Cereal Grain Germination," Experimentia 26:1296-1297 (1970).

<2444>
CHEMICAL NAME: Gibb-3-ene-1,10-dicarboxylic acid, 2,4a,7-trihydroxy-1-methyl-8-methylene-, 1,4a-lactone (1 alpha, 2 beta, 4a alpha, 4b beta, 10 beta)
CHEMICAL COMMON NAME: GA
PLANT: Marijuana (CANNIBIS SATIVA)
EXPERIMENTAL DOSE: 25 and 250 ppm
APPLICATION METHODS: Topical application (1 ml) to uppermost leaves
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Increased growth in height but decreased leaf and root weight with reduced tetrahydrocannabinol content
COMMENTS: Gibberellic acid caused significant increase in height and decrease in weight of leaves and tetrahydrocannabinol content; indoleacetic acid produced no significant changes
REFERENCE: Masoud, A.N., N.J. Doorenbos, and M.W. Quimby, "Mississippi-Grown CANNABIS SATIVA L. IV: Effects of Gibberellic Acid and Indoleacetic Acid," J. Pharm. Sci. 62(2):316-318 (1973).

<2445>
<2445>
CHEMICAL NAME: Gibb-3-ene-1,10-dicarboxylic acid, 2,4a,7-trihydroxy-1-methyl-8-methylene-, 1,4a-lactone (1 alpha, 2 beta, 4a alpha, 4b beta, 10 beta)
CHEMICAL COMMON NAME: GA
PLANT: (CATHARANTHUS ROSEUS)
EXPERIMENTAL DOSE: 1000 micro g (7 weekly applications)
APPLICATION METHODS: Topical application (0.1 ml) to uppermost leaves
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Increased growth in height and stem weight but reduced alkaloid content
COMMENTS: CATHARANTHUS ROSEUS, treated 7 weeks with weekly doses of gibberellic acid and harvested biweekly, showed significant increase in height and in stem dry weight; while GA treatment had favorable effect on growth and did not affect rate of flowering, it had unfavorable effect on concentration of total alkaloids in plant organs
REFERENCE: Masoud, A.N., L.A. Sciuchetti, N.R. Farnsworth, R.N. Blomster, and W.A. Meer, "Effect of Giberellic Acid on the Growth, Alkaloid Production, and VLB Content of CATHARANTHUS ROSEUS," J. Pharm. Sci. 57(4):589-593 (1968).

<2446>
CHEMICAL NAME: Gibb-3-ene-1,10-dicarboxylic acid, 2,4a,7-trihydroxy-1-methyl-8-methylene-, 1,4a-lactone, monopotassium salt, (1 alpha, 2 beta, 4a alpha, 4b beta, 10 beta)-
CHEMICAL COMMON NAME: Potassium gibberellate
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 100, 500, 2000, and 5000 ppm
APPLICATION METHODS: Varying treatment times and exposure periods
EXPERIMENTAL CONDITIONS: Greenhouse and field experiments; several barley varieties; nonvernalized and vernalized barley
EFFECTS: 32.8% male sterility in controls; 32.5% male sterility from 500 ppm applied until floral intiation; 41.1% male sterility from 500 ppm applied until heading; 68.7% male sterility from 500 ppm applied at anther initiation; 90.6% male sterility from 5000 ppm applied at anther initiation
COMMENTS: Male sterility caused by loss of nuclei at late stages of microsporogenesis or early stages of pollen maturation; very little sterility in spring or vernalized winter barley--most sterlity in winter varieties that produce spikes without cold treatment
REFERENCE: James, N.I. and S. Lund, "Induction of Male Sterility in Barley (HORDEUM VULGARE L. Emend. Lam.) with Potassium Gibberellate and Other Growth Regulators," Agron. J. 57: 269-272 (1965).

<2447>
CHEMICAL NAME: Glucal
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.3 mM
APPLICATION METHODS: Plants grown in solution containing chemical being tested
EXPERIMENTAL CONDITIONS: After germination in petri dishes, seedlings transplanted to reagent tube containing 6 g vermiculite and 25 ml Hoagland solution 2 that included 0.3 mM of chemical being tested; plants grown in growth chamber--16 hr photoperiod, 25 C day temperature and 12 C night temperature
EFFECTS: No toxic effects
REFERENCE: Chen, S-C. and R.M. Elofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<2448>
CHEMICAL NAME: Glucopyranoside, (3 beta, 5 alpha, 22R, 25S),3-amino-22-hydroxyfurostan-26-yl-beta-D-
CHEMICAL COMMON NAME: Jurubine
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Reduced growth of wheat with undefined effects in pea test
COMMENTS: Of 524 compounds examined, 71 were found highly active and a further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<2449>
CHEMICAL NAME: Glucopyranoside,
3-[2-(acetyloxy)-1-methylethyl]-1,2,4,5,6,6a,7,8,9,10a-decahydro-1,5-dihydroxy-9-(methoxymethyl)-6,10a-dimethyldicyclopenta[a,d]cycloocten-4yl-6-0-(1,1-dimethyl -2-propenyl)-, 3-acetate, [1S-[1 alpha, 3(R*), 4 alpha, 5 beta, 6 beta, 6a alpha, 9 beta, 10a beta]]-alpha-D-
CHEMICAL COMMON NAME: Fusicoccin
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Bean, snap (PHASEOLUS VULGARIS); Dogwood (CORNUS sp.)
EXPERIMENTAL DOSE: 1x10(-5)M
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Stomatal resistance to transpiration reduced in tomato, dogwood, and bean
COMMENTS: Stomata in tomato, dogwood, bean, and a number of other species found to open when 10(-5)M fusicoccin either absorbed through petiole or painted on leaf
REFERENCE: Turner, N.C. "Fusicoccin - a Phytotoxin That Opens Stomata," Proc. NATO Advanced Study Inst. 399-402 (1970).

<2450>
CHEMICAL NAME: Glucose, 2-amino-2-deoxy-D-, hydrochloride
CHEMICAL COMMON NAME: Glucosaminehydrochloride
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2451>
CHEMICAL NAME: Glycine, N-(carboxymethyl)-N-(phosphonomethyl)-
CHEMICAL COMMON NAME: MON-820
PLANT: Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 1.12, 2.24, 3.36 (fall only) and 4.5 kg/ha
APPLICATION METHODS: Application on established sod with a CO(2) sprayer in 336 l./ha water with 0.7% Aerosol OT surfactant (sulfosuccinic acid)
EXPERIMENTAL CONDITIONS: Four field experiments--1, 3 and 4 had 15 year old sod and # 2 had 1.5 year old sod; sod fertilized before treatment; 1.5 X 9.1 m plots in randomized complete block design with 4 replications; spring treatments--experiments 1, 3 and 4; fall treatments--experiment 2
EFFECTS: Experiment 1--all rates gave significant (1) height reduction after 36 days, (2) dry matter yield reduction after 27 days and (3) color change after 18 days; experiment 2--same results after 36, 28 and 56 days respectively; experiment 3--significant height and dry matter yield reduction after 37 and 62 days respectively at all rates, no significant color change at any rate; experiment 4--significant reduction in height and dry matter yield after 37 and 61 days respectively at all rates, significant color change after 40 days only at 2.24 kg/ha
COMMENTS: Possible use in managing highway roadbanks; greenhouse studies determined chemicals for field tests
REFERENCE: Elkins, D.M. and D.L. Suttner, "Chemical Regulation of Grass Growth. I. Field and Greenhouse Studies with Tall Fescue," Agron. J. 66:487-491 (1974).

<2452>
CHEMICAL NAME: Glycine, N-(carboxymethyl)-N-(phosphonomethyl)-
CHEMICAL COMMON NAME: MON-820
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Fescue, tall (FESTUCA ARUNDINACEA); Bermudagrass, common (CYNODON DACTYLON); Zoysiagrass (ZOYSIA JAPONICAA)
EXPERIMENTAL DOSE: 1.12, 2.24, 3.36 (experiment 1 only) and 4.5 kg/ha
APPLICATION METHODS: Experiments 1, 2 and 3--postemergence sprays applied in 356 l./ha water containing 0.7% Aerosol OT surfactant; experiment 4--application in 946 l./ha with surfactant
EXPERIMENTAL CONDITIONS: Field experiments--1.8 X 9.0 m plots in randomized complete block design with 4 replications, fall treatment; experiments 2 and 3--1.5 X 9.0 m plots, randomized complete block design with 4 replications, spring and fall treatments respectively; experiment 4--1.5 X 4.6 m plots, summer treatments, siduron added for weed control and chlordane for insect control, different bluegrass, bermudagrass and zoysiagrass varieties
EFFECTS: Experiment 1--after 42, 19 and 33 days, significant height reduction, color change and dry matter yield reduction respectively of bluegrass at all rates; experiment 2--same results as in experiment 1 except at 35, 24 and 49 days respectively; experiment 3--significant reduction in height and significant color change at 36 and 22 days respectively of bluegrass at all rates; experiment 4--significant reduction in height and dry matter yield and significant color change of bluegrass varieties at 40, 21 and 13 days respectively at all rates, significant reduction in height and significant color change of fescue at 21 and 13 days repectively at all rates, significant reduction in height and dry matter yield and significant change in color of bermudagrass and zoysiagrass
COMMENTS: Greenhouse experiments determined chemicals used in field tests; not recommended for lawn use
REFERENCE: Elkins, D.M., J.A. Tweedy, and D.L. Suttner, "Chemical Regulation of Grass Growth. II. Greenhouse and Field Studies with Intensively Managed Turfgrasses," Agron. J. 66:492-497 (1974).

<2453>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2-chlorophenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.27 M; barnyardgrass--4.50 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2454>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2-ethoxyphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.32 M; barnyardgrass--4.59 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2455>
<2455>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2-ethyl-6-methylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--6.70 M; barnyardgrass--6.46 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2456>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2-ethyl-6-methylphenyl)-, 1-methylethyl ester
CHEMICAL COMMON NAME: HOE 26910
PLANT: Crabgrass (DIGITARIA ISCHAEMUM); Bluegrass, Kentucky (POA PRATENSIS); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 4.48 kg/ha; 4% EC
APPLICATION METHODS: Preemergence spray (40 psi and 50 gal/A) and granule broadcast
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; evaluation time--up to 5 mo
EFFECTS: Slight to moderate crabgrass control with slight damage of turfgrasses
COMMENTS: Best control of crabgrass in both turf species obtained by DCPA, butralin, AC-92390, and prosulfalin; all rates of granular HOE-22870 provided good crabgrass control in red fescue; in bluegrass, HOE-22870 controlled crabgrass only at the high rate or when the low rate was reapplied
REFERENCE: Watschke, T.L., D.J. Wehner, and J.M. Duich, "Pre- and Postemergence Crabgrass Control in Turf," Proc. NE Weed Sci. Soc. 30:358-366 (1976).

<2457>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2-ethylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.54 M; barnyardgrass--5.01 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2458>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2-fluorophenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.21 M; barnyardgrass--4.49 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2459>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2-iodophenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.53 M; barnyardgrass--4.22 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2460>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2-methoxyphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.58 M; barnyardgrass--4.33 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2461>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2-methylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.27 M; barnyardgrass--4.95 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2462>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,3-dimethylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.13 M; barnyardgrass--5.43 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2463>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,4-dimethylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.95 M; barnyardgrass--4.09 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2464>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,4,5-trimethylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.76 M; barnyardgrass--4.40 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2465>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,4,6-trimethylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.95 M; barnyardgrass--4.32 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2466>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,5-dimethylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.98 M; barnyardgrass--4.92 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2467>
<2467>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.74 M; barnyardgrass--3.77 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2468>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, (4-methoxyphenyl) methyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.67 M; barnyardgrass--5.52 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2469>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, (4-nitrophenyl) methyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.89 M; barnyardgrass--4.44 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2470>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, butyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.76 M; barnyardgrass--6.12 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2471>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, cyanomethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.57 M; barnyardgrass--4.42 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2472>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, cyclohexyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.01 M; barnyardgrass--5.51 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2473>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, ethyl ester
CHEMICAL COMMON NAME: H-22234
PLANT: Cabbage (BRASSICA OLERACEA); Purslane, common (PORTULACA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pineappleweed (MATRICARIA MATRICARIODY)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; supplemental irrigation; crops direct seeded
EFFECTS: Effective weed control at 1.5 lb/A with slight cabbage phytotoxicity

<2473> CONT.
COMMENTS: Outstanding candidates for selectivity in seeded cabbage and control of barnyardgrass, purslane, and pineappleweed were H22234 and oryzalin; alachlor also gave excellent control but initial stunting of cabbage seedlings; by end of the season, phytotoxicity not visible with alachlor or any other treatment.
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicides for Weed Control in Sweet Corn and Cabbage," Proc. Northeast. Weed Sci. Soc. 31:256-260 (1977).

<2474>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, ethyl ester
CHEMICAL COMMON NAME: H-22234
PLANT: Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA LUTESCENS); Foxtail, green (SETARIA VIRIDIS); Sunflower (HELIANTHUS ANNUUS); Velvetleaf (ABUTILON THEOPHRASTI); Venice mallow (HIBISCUS TRIONUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed (AMARANTHUS sp.); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: Preemergence treatments; 1.5 gal capacity plot sprayer regulated to apply 30 gal per acre
EXPERIMENTAL CONDITIONS: Test compound mixed with water to make 1 gal of spray solution; 3 replicates; randomized complete block design; 4 to 5 rows wide by 40 ft long; multiple test locations
EFFECTS: No soy bean injury reported 62% grass control; 56% broadleaf control
COMMENTS: Foxtails--grasses; other weeds--broadleaf; combinations of herbicides also tested
REFERENCE: Seim, A.L. and V.M. Jennings, "Soybean Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:54-58 (1975).

<2475>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--6.31 M; barnyardgrass--6.40 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2476>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, ethyl ester
CHEMICAL COMMON NAME: H 22234
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.0, 1.5, and 3.0 lb/A
APPLICATION METHODS: Preemergence treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: Minor stand and vigor reduction of soybeans; excellent foxtail control; good lambsquarters control at 3.0 lb/A, satisfactory control at 1.5 lb/A and poor control at 1.0 lb/A
COMMENTS: Herbicide combinations also tested
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<2477>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, ethyl ester
CHEMICAL COMMON NAME: Hercules 22234
PLANT: Crabgrass (DIGITARIA ISCHAEMUM); Bluegrass, Kentucky (POA PRATENSIS); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 4.48 kg/ha; 4% EC
APPLICATION METHODS: Preemergence spray (40 psi and 50 gal/A) and granule broadcast
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; evaluation time--up to 5 mo
EFFECTS: Slight to moderate crabgrass control with slight damage of turfgrasses
COMMENTS: Best control of crabgrass in both turf species obtained by DCPA, butralin, AC-92390, and prosulfalin; all rates of granular HOE-22870 provided good crabgrass control in red fescue; in bluegrass, HOE-22870 controlled crabgrass only at the high rate or when the low rate was reapplied
REFERENCE: Watschke, T.L., D.J. Wehner, and J.M. Duich, "Pre- and Postemergence Crabgrass Control in Turf," Proc. NE Weed Sci. Soc. 30:358-366 (1976).

<2478>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, ethyl ester
CHEMICAL COMMON NAME: H-22234
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, creeping red (FESTUCA RUBRA); Crabgrass (DIGITARIA ISCHAEMUM); Goosegrass (ELEUSINE INDICA)
EXPERIMENTAL DOSE: 2, 3, 4, and 8 lb/A
APPLICATION METHODS: Preemergence spray treatments with CO(2) sprayer at 86 gpa; 4 lb/A treated plot in test 1 received a second treatment of 2 lb/A June 4; 4 lb/A in test 2 followed by 3 lb/A treatment on June 18
EXPERIMENTAL CONDITIONS: Test 1--crabgrass control test on turf grasses, 4 x 5 ft plots, 3 replications, ratings on August 22, herbicides applied May 1; test 2--goosegrass control study in bluegrass, May 20 treatment and September 23 ratings, 5 x 5 plots, 6 replications
EFFECTS: Test 1--poor crabgrass control even with 2 treatments to same plot, minor turfgrass injury; test 2--96% goosegrass control
COMMENTS: Fescue, bentgrass, and bluegrass tabulated as turfgrass in test 1
REFERENCE: Coville, C.M. and J.A. Jagschitz, "Herbicides for Preemergence Crabgrass and Goosegrass Control in Turfgrass--1975," Proc. Northeast. Weed Sci. Soc. 30:367-371 (1976).

<2479>
<2479>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, ethyl ester
CHEMICAL COMMON NAME: H 22234
PLANT: Corn (ZEA MAYS); Nutsedge, yellow (CYPERUS ESCULENTUS); Foxtail, giant (SETARIA FABERI); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.5 and 2.5 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Mattapex silt loam; time period--1974 and 1975
EFFECTS: Effective weed control at 2.5 lb/A with slight initial corn damage but no adverse effect on yield
COMMENTS: Best control of weed species achieved with combination of materials; only RP-20630 and RP-15018, at high rates, caused corn injury and reduced yields
REFERENCE: Parochetti, J.V., G.W. Burt, and A.W. Bell, "Triazines, Acetanilides, and Several Other Herbicides for Weed Control in Corn," Proc. N.E. Weed Sci. Soc. 30:48-54 (1976).

<2480>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, hexyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.64 M; barnyardgrass--5.01 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2481>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, methyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.99 M; barnyardgrass--6.00 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2482>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, pentyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.07 M; barnyardgrass--5.63 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2483>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, phenyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.90 M; barnyardgrass--5.02 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2484>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, phenylmethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.56 M; barnyardgrass--5.46 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2485>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, propyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.96 M; barnyardgrass--6.26 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2486>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, 1-methylethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--6.23 M; barnyardgrass--6.29 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2487>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, 1-methylpropyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.93 M; barnyardgrass--5.82 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2488>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, 1-phenylethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.75 M; barnyardgrass--5.42 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2489>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, 1,1-dimethylethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.42 M; barnyardgrass--5.28 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2490>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, 2-amino-1-methyl-2-oxyethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.10 M; barnyardgrass--4.23 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2491>
<2491>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, 2-cyanoethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.34 M; barnyardgrass--4.64 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2492>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, 2-hydroxyethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.45 M; barnyardgrass--5.29 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2493>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, 2-methoxyethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.93 M; barnyardgrass--5.75 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2494>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-diethylphenyl)-, 2-propenyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--6.27 M; barnyardgrass--6.38 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2495>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(2,6-dimethylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--6.31 M; barnyardgrass--6.24 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2496>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(3-chloro-2-methylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.85 M; barnyardgrass--4.98 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2497>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(3-chlorophenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.93 M; barnyardgrass--4.55 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2498>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(3-ethylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.84 M; barnyardgrass--4.49 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2499>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(3-methoxyphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.17 M; barnyardgrass--4.59 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2500>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(3-methylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.05 M; barnyardgrass--4.40 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2501>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(3-nitrophenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.75 M; barnyardgrass--4.48 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2502>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(3-propylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: RIce--3.46 M; barnyardgrass--4.21 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2503>
<2503>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(4-chloro-2-methylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.89 M; barnyardgrass--4.09 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2504>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(4-chlorophenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.81 M; barnyardgrass--3.96 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2505>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(4-fluorophenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.13 M; barnyardgrass--4.40 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2506>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(4-methoxyphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.46 M; barnyardgrass--4.60 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2507>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-(4-methylphenyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.77 M; barnyardgrass--4.43 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2508>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-[2-(1-methylethoxy)phenyl]-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.56 M; barnyardgrass--4.44 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2509>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-[2-(1-methylethyl)phenyl]-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.55 M; barnyardgrass--5.32 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2510>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-[2-(1-methylpropyl)phenyl]-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--5.35 M; barnyardgrass--5.42 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2511>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-[3-(trifluoromethyl)phenyl]-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.11 M; barnyardgrass--4.56 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2512>
CHEMICAL NAME: Glycine, N-(chloroacetyl)-N-phenyl-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.94 M; barnyardgrass--3.96 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2513>
CHEMICAL NAME: Glycine, N-(N-L-gamma-gluotmyl-L-cysteinyl)-
CHEMICAL COMMON NAME: Glutathione
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 to 10.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; pea leaf sections; radiotracer studies of alkane synthesis
EFFECTS: Did not inhibited alkane synthesis
COMMENTS: Dithioerythritol, dithiothreitol, and mercaptoethanol (but not glutathione or cysteine) specifically inhibited alkane biosynthesis in young pea leaf tissue, and at the same time elongated chains accumulate in wax ester and fatty aldehyde fractions; inhibition of C(31) alkane synthesis by DTE resulted in accumulation of C(32)
REFERENCE: Buckner, J.S. and P.E. Kolattukudy, "Specific Inhibition of Alkane Synthesis with Accumulation of Very Long Chain Compounds by Dithioerythritol, Dithiothreitol, and Mercaptoethanol in PISUM SATIVUM," Arch. Biochem. and Biophys. 156:34-45 (1973).

<2514>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Quackgrass (AGROPYRON REPENS); Apple (MALUS SYLVESTRIS); Orchard grass (DACTYLIS GLOMERATA); Milkweed (ASCLEPIAS sp.); Dandelion (TARAXACUM OFFICINALE); Grape (VITIS sp.)
EXPERIMENTAL DOSE: 1.1-4.4 kg/ha
APPLICATION METHODS: Postemergence spray; 180 l. /ha; one, two, and three applications
EXPERIMENTAL CONDITIONS: Field study; applications made in commercial appple orchard and vineyard plots; evaluation time--4 mos
EFFECTS: 2.2 kg/ha rate of appliction (2 applications) resulted in good control of weed species studied with no damage to apple (up to 4.4 kg/ha) and little damage to grape (resulting from direct contact)
COMMENTS: Effective control of grasses and broadleaf plants achieved with no adverse effects on maturity of fruit size of either crop; glyphosate had little preemergence or residual activity; two applications and/or use with a preemergence herbicide (e.g., terbanil) recommended
REFERENCE: Baird, D.D., H.J. Shaulis, and C.G. Waywell, "Glyphosate for Herbaceous Weed Control in Northeastern Apple Orchards and Vineyards," Proc. Northeast. Weed Sci. Soc. 28:205-212 (1974).

<2515>
<2515>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Quackgrass (AGROPYRON REPENS); Pine, white (PINUS STROBUS); Juniper, andorra (JUNIPERUS HORIZONTALIS); Yew, spreading (TAXUS CUSPIDATA); Euonymous, sarcoxie (EUONYMUS RADICANS); Nightshade, black (SOLANUM NIGRUM); Galinsoga, hairy (GALINSOGA CILIATA); Nettle, stinging (URTICA DIOICA); Sorrell, wood (OXALIS STRICTA); Yellow rocket (BARBAREA VULGARIS); Purslane, common (PORTULACA OLERACEA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 1.5 and 3 lb/A
APPLICATION METHODS: Formulation -- 3 lb/gal liquid; sprays applied with knapsack sprayer calibrated to deliver 50 gal/A; preplanting application
EXPERIMENTAL CONDITIONS: Silt loam soil; 10x12 ft plots; fall--quackgrass 6 to 12 in. tall, air temperature 58 degrees F, soil temperature at 3 in. depth 45 degree F; spring -- quackgrass 6 to 10 in. tall with 4 to 5 leaves, air temperature 63 degrees F, soil temperature at 3 in. 53 degrees F
EFFECTS: Most effective herbicide tested for quackgrass contol -- 1.5 lb/A gave over 90% control; did not control annual weeds; no injury to white pines, junipers, yews or euonymus
COMMENTS: Heavy rains fell the day after fall application
REFERENCE: Ahrens, J.F., "Preplant Herbicides for Control of Quackgrass in Ornamentals," Proc. Northeast. Weed Sci. Soc. 28:372-378 (1974).

<2516>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Quackgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 0.56, 1.12, 1.68, 2.24 and 4.49 kg/ha
APPLICATION METHODS: Applications made when plants were 15 to 20 cm tall, postemergence treatment
EXPERIMENTAL CONDITIONS: Plot -- 180 by 600 cm; nine leaves per treatment selected, leaf discs harvested from leaves of treated plants at 24, 48, 96, and 192 hr after treatment
EFFECTS: Yellowing of leaves observed at 2.24 and 4.49 kg/ha within 72 hr, and at 0.56, 1.12, and 1.68 kg/ha at 120 hr after treatment; cellular damage detected at all dose rates 24 hr after treatment -- partial to complete disruption of the chloroplast envelope and swelling of rough endoplasmic reticulum with subsequent formation of vesicles; chloroplast completely disrupted with time; other organelles also destroyed
COMMENTS: Difficult to determine if damage is due to herbicide or from natural cell degeneration; indication that glyphosate enhances leaf senescence and interferes with Hill reaction
REFERENCE: Campbell, W.F., J.O. Evans, and S.C. Reed, "Effects of Glyphosate on Chloroplast Ultrastructure of Quackgrass Mesophyll Cells," Weed Sci. 24(1): 22-25 (1976).

<2517>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Quackgrass (AGROPYRON REPENS); Soybean (GLYCINE MAX); Corn (ZEA MAYS); Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 1, 1.5, 2, and 3 lb/A
APPLICATION METHODS: No applications - treatments were made the season before
EXPERIMENTAL CONDITIONS: Alfalfa, corn, and soybean fields; determination made of residual activity of glyphosate against quackgrass
EFFECTS: Alfalfa fields -- highly effective quackgrass control even at 1.0 lb/A; corn and soybean fields -- second season quackgrass control reduced when compared to excellent control the year before
COMMENTS: Residual activity of glyphosate more effective in alfalfa than in corn and soybeans; differences in residual activity may be due to a crop related factor
REFERENCE: Fay, P.K., J.F. Hunt, W.B. Duke and R.F. Lucey, "Quackgrass Control the Season after Glyphosate Application in Three Agronomic Crops," Proc. Northeast. Weed Sci. Soc. 28:87-92 (1974).

<2518>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Quackgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 1.12 and 2.25 kg/ha
APPLICATION METHODS: Greenhouse--postemergence, application at 2.8 kg/cm(2) pressure and 620 l./ha volume; field--postemergence, application at same pressure but rate of 280 l./ha
EXPERIMENTAL CONDITIONS: Greenhouse--plastic pots, 1.12 kg/ha application to 4 growth stages: (a) 1-3 leaf, (b) 4-5 leak, (c) 6-7 leaf, and (d) near flowering, 5 replications in randomized complete block design; field--2.25 kg/ha application to 1-3 leaf stage, 4-5 leaf stage, and 6-7 leaf stage
EFFECTS: Greenhouse--excellent control at all stages exept 1-3 leaf (poor control); field--excellent control at 2-4 and 6-7 leaf stages, moderate control at 1-2 leaf stage
COMMENTS: Increased toxicity with increased leaves because glyphosate translocation increased
REFERENCE: Ivany, J.A., "Effects of Glyphosate Application at Different Growth Stages on Quack Grass Control," Can. J. Plant Sci. 55:861-863 (1975).

<2519>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, and 10(-6)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days

<2519> CONT.
EFFECTS: Complete control of shoot emergence at 10(-3) and 10(-4)M; moderate control at 10(-5)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2520>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Bermudagrass, common (CYNODON DACTYLON); Nutsedge, purple (CYPERUS ROTUNDUS); Bindweed, field (CONVOLVULUS ARVENSIS); Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: Experiment 1--2 to 8 lb per season; experiment 2--1, 2, 4, 8 and 16 lb/A
APPLICATION METHODS: Experiment 1--2 lb/A repeated application; experiment 2--fall, spring and early summer applications
EXPERIMENTAL CONDITIONS: Experiment 1--weed control evaluated on basis of commercial control (70 to 100%); experiment 2--weed control evaluated on basis of commercial control (70 to 100%), 3-4 replications, only plant tested was bindweed
EFFECTS: Experiment 1--2 to 4 lb gave commercial control of all weeds but purple nutsedge, bindweed showed variable results, 4 to 8 lb gave commercial control of all species; experiment 2--commercially acceptable control only at 4, 8 and 16 lb/A
COMMENTS: Article primarily concerns glyphosate as effective perennial weed killer--described as being nonselective; results of 3 studies presented only in tabular form; experiment 2 results reported on basis of average values
REFERENCE: Lange, A., H. Kempen, W. McHenry, and O. Leonard, "Roundup--A New Perennial Weed Killer," Calif. Agric. 27(2):6-7 (1973).

<2521>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Bahiagrass (PASPALUM NOTATUM)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 37-50 gal/A
EXPERIMENTAL CONDITIONS: Field study; 3 locations (FL); time period--1971 and 1972; evaluation time--8 to 26 wks
EFFECTS: Effective control of bahiagrass at 2.0 and 4.0 lb/A
COMMENTS: Combinations of diuron or simazine plus 2 applications of dalapon, 2 applications of dalapon alone or single applications of glyphosate provided best grass control; in addition, bahiagrass controlled with oxadiazon and asulam
REFERENCE: Arnold, C.F. and J.B. Aitken, "Perennial Grass Control in Pecan Orchards," Proc. South. Weed Sci. Soc. 26:231-235 (1973).

<2522>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glycophosate
PLANT: Johnson grass (SORGHUM HALEPENSE); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI); Jimsomweed (DATURA STRAMONIUM); Signalgrass, broadleaf (BRACHIARIA PLATYPHYLLA); Cocklebur, common (XANTHIUM PENSYLVANICUM); Morningglory, bigroot (IPOMOEA PANDINATA); Horseweed (ERIGERON CANADENSIS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.25, 0.50, 1.0, 1.50, 2.0, 3.0, 4.0 and 5.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 gal/A; 30 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; minimum tillage, stale seedbed, and no tillage experiments; weeds treated and crop planted 13 to 35 days after herbicide application
EFFECTS: Effective control of all weeds at 3.0 lb/A with no adverse effect on soybean; 1.0 and 2.0 lb/A applications nearly as effective
COMMENTS: Preplant and at-planting applications provided excellent control of johnsongrass and all other weeds; addition of residual preemergence herbicides, cultivation, and post-directed applications of glyphosate to 18-24 inch soybeans provided acceptable seedling control
REFERENCE: Connell, J.T. and C.W. Derting, "Glyphosate Performance on Johnson Grass and Associated Weed Species in No-Tillage Soybeans," Proc. South. Weed Sci. Soc. 26:51-58 (1973).

<2523>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 0.5, 1.0, and 2.0 lb/A
APPLICATION METHODS: To cotton at 10, 12, and 16 inches, to soybeans at 12, 16, and 24 inches, and to johnsongrass at 36, 42, and 48 inches; MON 2139 glyphosate formulation--3 lb/gal acid equivalent of the isopropylamine salt of [N-(phosphenomethyl)glycine] and 1.5 lb/gal surfactant; topical or directed spray at 20 gpa
EXPERIMENTAL CONDITIONS: 3 field experiments--cotton, soybeans, and johnsongrass; Vicksburg fine sandy loam for cotton and soybean, Memphis silt loam for johnsongrass; spring planting; each area fertilized and received 0.75 lb/A trifluralin for seedling grass control; cotton treated with preemergence 1.5 lb/A fluometuron, soybeans with 3.0 lb/A naptalam and 1.5 lb/A dinoseb for broadleaf weed control; randomized complete block design with 3 replicates
EFFECTS: Cotton showed some crop tolerance at lower glyphosate rates at 24-inch stage; soybeans showed some tolerance to 0.5 lb/A at all stages, 2.0 lb/A phytotoxic to cotton and soybeans, 1.0 lb/A caused severe injury; topical 0.5 lb/A treatment controlled 80% of johnsongrass, directed applications less effective; directed applications apparently placed too high on plant, injurious to cotton and soybeans; vigor reduction of both soybean and cotton

<2523>
<2523> CONT.
COMMENTS: Soybeans--0.5 lb/A topically applied was the most promising; future cotton research--topical application of 0.5 lb/A to at least 16-inch cotton or directed treatments of 0.5 to 1.0 lb/A to 10-inch cotton
REFERENCE: Overton, J.R., J.A. Mullins, and L.S. Jeffery, "Response of Cotton, Soybeans and Johnsongrass to Glyphosate," Proc. South. Weed Sci. Soc. 26:28-35 (1973).

<2524>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Johnson grass (SORGHUM HALEPENSE); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Postemergence
EXPERIMENTAL CONDITIONS: Field tests; 4 replications, 68 rows wide and 30 feet long; Vicksburg fine sandy loam and Collins silt loam; each replication divided into 4 main plots, 16 rows wide plus 4 ft row wide check; fall applications to established johnsongrass sod
EFFECTS: Foliage injury described as "burning down"; extensive foliage kill
COMMENTS: Two weeks after application, ground plowed and other herbicides added in spring
REFERENCE: Overton, J.R., J.A. Mullins, and L.S. Jeffery, "Johnsongrass Control in Corn Harvested for Silage," Tenn. Farm Home Sci. Prog. Rep. 94:18-20 (1975).

<2525>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Cucumber (CUCUMIS SATIVUS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Galinsoga (GALINSOGA PARVIFLORA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed, prostrate (AMARANTHUS BLITOIDES); Foxtail, giant (SETARIA FABERI); Purslane, common (PORTULACA OLERACEA); Lamb's-quarters (CHENOPODIUM ALBUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Murrill loam; fall plowing, seedbed preparation the following May 28; cucumber planted 12 days later on June 10; herbicides applied 1 day after planting; single row plots 5 by 36 ft
EFFECTS: Good weed control, minor cucumber injury; significant increase in fruit compared to untreated check; best results at 2 lb/A
COMMENTS: One of the most promising herbicides tested; glyphosate in combination with napthalam and chloramben also tested
REFERENCE: Noll, C.J., "Herbicide Weeding of Cucumber Grown in a Stale Seed Bed," Proc. Northeast. Weed Sci. Soc. 29:262-263 (1975).

<2526>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Cucumber (CUCUMIS SATIVUS); Grasses; Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tumbleweed (AMARANTHUS ALBUS)
EXPERIMENTAL DOSE: 2 and 3 lb/A
APPLICATION METHODS: Preemergence treatments 1 day after planting
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared June of following year; single row plots, 5 by 36 ft; plots seeded 13 days after seedbed preparation; plots harvested 2.5 months after planting
EFFECTS: 2 lb/A--minor cucumber injury, good control of grasses, pigweed and tumbleweed, fair purslane control; 3 lb/A--minor cucumber injury, good control of all weeds
COMMENTS: Glyphosate + naptalam gave similar weed control
REFERENCE: Noll, C.J., "Weed Control in Cucumbers in a Conventional Planting and in a Stale Seed Bed," Proc. Northeast. Weed Sci. Soc. 31:248-251 (1977).

<2527>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Sorghum (SORGHUM BICOLOR); Pea, cow- (VIGNA UNQUICULATA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 5.6, 22.4, 44.8 and 89.6 ug/plant
APPLICATION METHODS: Formulation--40% acid equivalent, technical grade; herbicide solution in water containing 0.5% (v/v) X-77 as surfactant was applied on plants
EXPERIMENTAL CONDITIONS: Cowpea plants 10 to 12 days old when treated and sorghum plants were 25 to 28 days old; cowpea leaves treated by depositing 0.1 ml herbicide solution on upper surface, 0.1 ml deposited in partially expanded second true leaf of sorghum; 0.1 ml applied to hypocotyl of cowpea in other tests; germination effects determined by soaking seeds in 10(-7), 10(-6), 10(-5), 10(-4) and 10(-3)M aqueous solutions for 2, 4, and 8 hours, after treatment, seeds washed with 35 ml distilled water--effects recorded for wheat as well as other plants
EFFECTS: Sorghum and cowpea growth inhibition at all rates, about 90% at 89.6 ug; noticeable cowpea death at 44.8 ug (20%), 89.6 ug gave 60% kill; noticeable sorghum desiccation at 22.4 ug (30%), 89.6 ug gave 90% or greater desiccation; no significant inhibitory effect on sorghum, wheat or cowpea
COMMENTS: Sorghum seedlings more sensitive than cowpea seedlings
REFERENCE: Baur, J.R. and R.W. Bovey, "Herbicidal Effects of Tebuthiuron and Glyphosate," Agron. J. 67:547-553 (1975).

<2528>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 0.5, 1.0 and 2.0 lb/A
APPLICATION METHODS: Postemergence application
EXPERIMENTAL CONDITIONS: Application in spring only, immediately after first nutsedge counts; field studies--4 x 20 ft plots with 3 replications
EFFECTS: 1.0 and 0.5 lb/A gave significant control during month 6 and 7 after application; 2.0 lb/A gave excellent control at 2, 6 and 7 months after application--100% kill at months 2 and 6
REFERENCE: Locascio, S.J. and W.L. Currey, "Yellow Nutsedge (CYPERUS ESCULENTUS) control and Vegetable Crop Tolerance with Various Herbicides," Proc. South. Weed Sci. Soc. 26:259-266 (1973).

<2529>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 250 to 2500 ppm
APPLICATION METHODS: Soil addition of morphactin; postemergence spray of glyphosate
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Reduced foliage and root weight at all concentrations
COMMENTS: Pretreatment with morphactin CME 73170P released all buds from dormancy; postemergence application of glyphosate then killed all sprouts
REFERENCE: El-Masry, R. and S. Rehm, "The Effects of Growth Regulators and Herbicides on Purple Nutsedge (CYPERUS ROTUNDUS L.) IV. Effects of Glyphosate and Morphactin on the Viability of Tubers," J. Agron. Crop Sci. 144:259-267 (1977).

<2530>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Soybean (GLYCINE MAX); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A; WS
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold loam; soybeans planted with no tillage in wheat stubble; evaluation time--1 mo; soybeans planted one day before herbicide applications
EFFECTS: At 1.5 lb/A, effective control of weeds with slight vigor reduction of soybeans
COMMENTS: Only paraquat and glyphosate applied alone gave good weed control; Paraquat and metribuzin reduced soybean stands but not seriously; alachlor and penoxalin did not control panicum; penoxalin or linuron in combination with glyphosate or paraquat improved control of many weed species over penoxalin and linuron applied alone; combinations of the two with either of the contact herbicides (3-way combinations) did not improve degree of control effected by single herbicides applied with paraquat or glyphosate; combinations of RH-2915 and alachlor did not improve weed control over either herbicide applied alone; considerable improvement resulted when glyphosate or paraquat added to the combination
REFERENCE: Michieka, R.W., R.D. Ilnicki, and J.R. Justin, "Weed Control in Double-Crop Soybeans with Herbicides Applied Alone and in Combination with Paraquat or Glyphosate," Proc. Northeast. Weed Sci. Soc. 31:61-69 (1977).

<2531>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Fescue, creeping red (FESTUCA RUBRA); Bluegrass, Kentucky (POA PRATENSIS); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Laboratory sprayer at a volume of 374 l./ha
EXPERIMENTAL CONDITIONS: 7.6 cm plastic pots, sandy loam soil at pH 6.2; greenhouse study; applications made before seeding and directly over seeds
EFFECTS: 4.5 kg/ha caused no significant effect on germination; clippings from turf sprayed with glyphosate had no significant effect on germination when spread over seeded soil, however 4% bluegrass, 9% red fescue and 9% tall fescue seedlings died after emergence
COMMENTS: Clippings of treated grass added to simulate natural cover when turf is sprayed in the field
REFERENCE: Klingman, D.L. and J.J. Murray, "Germination of Seeds of Turfgrasses as Affected by Glyphosate and Paraquat," Weed Sci. 24(2):191-193

<2532>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Cogongrass (IMPERATA CYLINDRICA)
EXPERIMENTAL DOSE: 2.2 and 4.5 kg/ha
APPLICATION METHODS: Postemergence spray; 300 l./ha; 0.5% surfactant
EXPERIMENTAL CONDITIONS: Field study; pure cogongrass stands in near-dormant state; time period--1971 and 1972
EFFECTS: Moderate control at higher rate; regrowth in one year
COMMENTS: All soil sterilants provided acceptable control; single applications of TCA and dalapon controlled cogongrass without prolonged soil sterility
REFERENCE: Dickens, R. and G.A. Buchanan, "Control of Cogongrass with Herbicides," Weed Sci. 23(3):194-197 (1975).

<2533>
<2533>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Bermudagrass, common (CYNODON DACTYLON); Bluegrass, annual (POA ANNUA); Parsley-piert (ALCHEMILLA MICROCORPA); Speedwell, corn (VERONICA ARVENSIS); Henbit (LAMIUM AMPLEXICAULE); Chickweed, common (STELLARIA MEDIA)
EXPERIMENTAL DOSE: 0.3, 0.6, 1.1, and 2.2 kg/ha
APPLICATION METHODS: Postemergence spray; 375 l./ha; one or two applications
EXPERIMENTAL CONDITIONS: Field study; three locations; 2 years; applications made in January or February when bermudagrass was dormant
EFFECTS: At 0.6 kg/ha in a single application, all weeds were effectively controlled with no adverse effect on bermuda grass
COMMENTS: Glyphosate gave good to excellent control of several winter annuals; the combination treatment of 2,4-D ++ mecoprop + dicamba gave inconsistent weed control for all winter annuals evaluated except common chickweed; control of annual bluegrass and common chickweed was equal when treated with either paraquat or glyphosate
REFERENCE: Johnson, B.J., "Glyphosate for Weed Control in Dormant Bermudagrass," Weed Sci. 24(1):140-143 (1976).

<2534>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Broadleaf weeds; Grasses; Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Preemergence directed spray; 50 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Hartsell's loam; time period--1970 to 1972
EFFECTS: At 4.0 lb/A, moderate to effective control of broadleafs and moderate control of grasses with no adverse effect on apple trees
COMMENTS: Terbacil, simazine+paraquat, and R-7465 treatments effectively controlled annual broadleaf and annual grass weeds during 1971-1972; certain perennial weed species not controlled effectively in the terbacil treated plots; spring and summer applications of glyphosate at three rates provided good contact kill of existing weeds, but reinfestation of plots with annual weeds, especially crabgrass, a problem
REFERENCE: Mullins, C.A., H.D. Swingle, and D.L. Coffey, "Growth and Field Response of Apple Trees to Certain Herbicides," Proc. S. Weed Sci. Soc. 26:225-229 (1973).

<2535>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tinda (CITRULLUS VULGARIS)
EXPERIMENTAL DOSE: 0.56, 1.12, and 1.68 kg/ha (est.)
APPLICATION METHODS: Postemergence spray; 94 to 187 l./ha; recirculating and regular sprayers; 0.1% surfactant; 0.1% anti-drift polymer; foam formulation evaluated
EXPERIMENTAL CONDITIONS: Field study; time period--1972 to 1974
EFFECTS: At 1.12 and 1.68 kg/ha, effective control of all weeds with little or no injury to soybean and no adverse effect on soybean yield; recirculating spray application very effective
COMMENTS: Glyphosate effectively controlled johnsongrass with little soybean injury and with greatly increased soybean yields; use of 0.1% surfactant frequently increased toxicity of glyphosate to soybeans; this adverse effect was overcome by the use of 0.1% anti-drift polymer in sprays
REFERENCE: McWhorter, C.G., "Weed Control in Soybeans with Glyphosate Applied in the Recirculating Sprayer," Weed Sci. 25(2):135-141 (1977).

<2536>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 2.0 kg/ha
APPLICATION METHODS: Postemergence spray application with soil incorporation by rototilling; 335 l/ha
EXPERIMENTAL CONDITIONS: Field application; removal of surviving tubers to greenhouse; evaluation time--6 wk (count of tuber germination)
EFFECTS: Moderately reduced tuber germination
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<2537>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 2.25 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha; 0.5% Biofilm added
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Haverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: Reduced tuber numbers and dry weight; no recovery up to 43 days
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<2538>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Chamise (ADENOSTOMA FASCICULATUM); Chamise, redshank (ADENOSTOMA SPARSIFOLIUM)
EXPERIMENTAL DOSE: 2.24, 3.36, and 4.48 kg/ha
APPLICATION METHODS: Postemergence in 187 l./ha water using constant pressure backpack sprayer; isopropyl amine salt formulation
EXPERIMENTAL CONDITIONS: Five field tests, 4-year period; 30-year old chamise in experiment A, 3 to 4-year old chamise in other tests; randomized block design except experiment C; split-plot design for experiment C, application time as main plot and treatments as subplots, 29.7 m(2) subplot size; plot size for tests A, B, D, E, 40.9 M(2); visual injury evaluation 1 year after treatment, measured evaluation within 15 to 48 months after application
EFFECTS: 2.24 kg/ha--91 to 98% control of chamise, 7 and 0% redshank chamise control with spring and fall application respectively; 3.36 kg/ha--100% chamise control after 44 months; 4.48 kg/ha--100% chamise control at 21 months, 96 and 0% redshank control with spring and fall application respectively
COMMENTS: Foliage injury and canopy reduction also recorded; no discernible pattern between spring and fall treatments for chamise (A. FASICULATUM) control
REFERENCE: Radosevich, S.R., W.L. Graves, and H.A. Agamalian, "Response of Two ADENOSTOMA Species to Several Herbicides," Weed Sci. 25(2):188-192 (1977).

<2539>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Guineagrass (PANICUM MAXIMUM); Vaseygrass (PASPALUM URVILLEI); Bermudagrass, common (CYNODON DACTYLON); Torpedograss (PANICUM REPENS); Bahiagrass (PASPALUM NOTATUM); Paragrass (PANICUM PURPURASCENS)
EXPERIMENTAL DOSE: 1, 2, 3, and 4 lb/A
APPLICATION METHODS: Postemergence--1, 2, and 4 lb/A with surfactant in 40 gpa water, 2 and 4 lb/A with surfactant in 40 gpa water, and 1, 2, and 3 lb/A in 46 gpa water
EXPERIMENTAL CONDITIONS: 3 field experiments; grasses normally found in citrus groves; 1971 and 1972 tests
EFFECTS: Good to outstanding control of all species
COMMENTS: Glyphosate, best herbicide tested; suggestion for prolonged weed control--glyphosate (systemic herbicide) in combination with soil sterilants
REFERENCE: Phillips, R.L., "Control of Perennial Grasses in Citrus Groves," Citrus Ind. 54(7):22-23 (1973).

<2540>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Milfoil, water (MYRIOPHYLLUM SPICATUM); Pondweed, curly-leaf (POTOMOGETON CRISPUS)
EXPERIMENTAL DOSE: 0.1, 10, and 5000 ppm (w/w)
APPLICATION METHODS: Added to jars containing growing plants
EXPERIMENTAL CONDITIONS: Grown in glass jars; plants 30 to 40 cm when herbicide added; 4 replicates of each treatment; at 0.5, 1.5, and 10 hr, five 10 cm apical portions of stem taken, thoroughly rinsed and place in jars without herbicide to check regrowth; regrowth of roots determined in similar manner
EFFECTS: 5 hr treatments of high herbicide concentrations (1000 ppm) necessary for satisfactory control; low concentrations (0.1 ppm) increased plant growth; concentrations as high as 5000 ppm did not prevent regrowth from roots
COMMENTS: Low concentrations increased plant growth due to phosphorus from glyphosate, toxic action not strong enough to overcome nutrient addition; milfoil more tolerant than pondweed
REFERENCE: Beverly, J.H. and T.W. Crawford, "Glyphosate as an Herbicide for Two Submerged Aquatic Species," Proc. Northeast. Weed Sci. Soc. 29:102-107 (1975).

<2541>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Quackgrass (AGROPYRON REPENS); Orchard grass (DACTYLIS GLOMERATA); Bluegrass, Kentucky (POA PRATENSIS); Dandelion, common (TARAXACUM OFFICINALE); Crabgrass, large (DIGITARIA SANGUINALIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1, 2, and 4 lb/A ae
APPLICATION METHODS: Postemergence in water at 40 gpa
EXPERIMENTAL CONDITIONS: Woodbridge fine sandy loam; 2 tons/A lime and 800 lb/A 15-15-15 fertilizer applied April 17, corn seeded May 22; 9 by 30 ft plot; herbicide treatments April 24 when grass growth just starting and May 27 when grass was 10 to 12 inches tall; field experiments; above average rainfall
EFFECTS: 2 and 4 lb/A applied April 24--good control of all but crabgrass (poor control); 1 lb/A April 24--moderate control of all but crabgrass (poor control); all rates on May 27 gave good control of all species except crabgrass (poor control); corn yield best with 2 and 4 lb/A on April 24 and 2 lb/A applied May 27, all yields better than unweeded control
COMMENTS: No reported corn injury; combinations with other herbicides also tested
REFERENCE: Peters, R.A. and W.M. Dest, "Glyphosate for Perennial Sod Kill in No-Tillage Corn," Proc. Northeast. Weed Sci. Soc. 27:1-6 (1973).

<2542>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Rye (SECALE CEREALE); Nutsedge, yellow (CYPERUS ESCULENTUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Treatments within 3 days of planting at 30 gpa
EXPERIMENTAL CONDITIONS: Beltsville silt loam; no tillage field experiments--rye cover crop and corn; randomized complete block design with 4 replications; corn planting dates--April 23, 1974, May 9, 1975, and April 26, 1976

<2542>
<2542> CONT.
EFFECTS: 1974--74% rye necrosis, unacceptable panicum control; 1975--unacceptable nutsedge and panicum control June 18, no corn injury July 18, unacceptable panicum control July 16
COMMENTS: Combinations of herbicides also tested
REFERENCE: Parochetti, J.V. and A.W. Bell, "Residual Herbicides on No-Tillage Corn in a Rye Cover Crop," Proc. Northeast. Weed Sci. Soc. 31:24-29 (1977).

<2543>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Panicum, fall (PANICUM DICHOTOMIFLORUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Horseweed (CONYZA CANADENSIS); Foxtail, green (SETARIA VIRIDIS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preemergence and postemergence treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Mattapeake silt loam; field experiments, 1974 to 1976; 10 by 20 ft plots, randomized complete block design with 4 replications; visual ratings; soybeans planted after barley harvest--double cropping, no-tillage soybeans; June 10 soybean planting
EFFECTS: Good to excellent control of all weeds except foxtail which had unacceptable control; no soybean injury first year, minor injury in 1975 and 1976
COMMENTS: All weeds except foxtail present at time of soybean planting and herbicide application; combinations with other herbicides also tested
REFERENCE: Parochetti, J.V., "Herbicides for No-Tillage Double Cropped Soybeans," Proc. Northeast. Weed Sci. Soc. 31:54-60 (1977).

<2544>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Fern, bracken (PTERIDIUM AQUILINUM); Grasses
EXPERIMENTAL DOSE: 2.2 and 4.4 kg/ha
APPLICATION METHODS: Foliar spray; 264 l./ha
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of bracken fern and grass weeds
COMMENTS: Excellent control of bracken obtained with asulam applied at 2.2 and 4.4 kg/ha by knapsack sprayer, and by helicopter; Glyphosate applied in mid July and August gave complete destruction of both bracken fronds and grass sward beneath in year of application with almost no regeneration of either in following year
REFERENCE: Scragg, E.B., A.D. McKelvie, and D.W. Kilgour, "Further Work on the Control of Bracken in the North of Scotland," Proc. 12th. British Weed Cont. Conf. 2:761-769 (1974).

<2545>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Johnson grass (SORGHUM HALEPENSE); Guineagrass (PANICUM MAXIMUM); Nutsedge, purple (CYPERUS ROTUNDUS); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/A
APPLICATION METHODS: Postemergence spray; 40 gal/A; 40 psi; directed
EXPERIMENTAL CONDITIONS: Field study; nursery
EFFECTS: At 3.0 lb/A, effective control initially of all weeds except bermudagrass which required a second application for effective control; residual control obtained by repeat applications at 1.5 lb/A
COMMENTS: Glyphosate gave excellent control of rhizome johnsongrass, established guineagrass, and purple nutsedge; repeated applications of glyphosate, provided excellent control of above mentioned species and bermudagrass up to 5 months after initial treatment
REFERENCE: Klosterboer, A.D., "Glyphosate and MSMA for Control of Perennial Weeds in Texas Citrus Orchards," Rio Grande Valley Hort. Soc. J. 27:63-66 (1973).

<2546>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, creeping (AGROSTIS PALUSTRIS); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 1 x 10(-6) to 1 x 10(-4)M and 1.1 to 17.9 kg/ha
APPLICATION METHODS: Preemergence and preplant incorporated spray; 935 l./ha
EXPERIMENTAL CONDITIONS: Environmental chamber; soil--Conover loam; flat culture; field study --Flanagan silt loam; germination study in petri plates
EFFECTS: At 1.0 x 10(-4)M, bluegrass shoots were severely reduced with less reduction on bent and fescue; germination was not reduced at any application rate for any of the grasses
COMMENTS: Glyphosate reduced shoot growth in all but two cultivars; siduron had no effect; glyphosate or siduron applied to the soil and incorporated did not affect turfgrass germination or growth
REFERENCE: Moshier, L., A.J. Turgeon, and D. Penner, "Effects of Glyphosate and Siduron on Turf Grass Establishment," Weed Sci. 24(5):445-448 (1976).

<2547>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Velvetgrass (HOLCUS LANATUS); Timothy (PHLEUM PRATENSE)
EXPERIMENTAL DOSE: 0.14, 0.28, and 0.56 kg/ha
APPLICATION METHODS: Postemergence spray; 450 l./ha; Oxford precision sprayer--'0' size nozzle
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At 0.28 kg/ha, severe damage to timothy and moderate control of HOLCUS

<2547> CONT.
COMMENTS: Linuron proved most successful in controlling HOLCUS; gave highest yields of timothy at hay cut and heaviest individual seed heads; glyphosate particularly severe on timothy growth; asulam offered reasonable degree of control at a high rate of spraying
REFERENCE: Harkess, R.D. and R.A. Hope, "The Control of Yorkshire Fog (HOLCUS LANATUS L.) in Timothy Swards," Proc. 12th. Br. Weed Cont. Conf. 2:733-736 (1974).

<2548>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 0.1 to 100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<2549>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Speedwell, creeping (VERONICA FILIFORMIS); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 2.0 lb/A; 3% EC
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control with severe damage to turfgrass
COMMENTS: Non-selective control achieved with glyphosate; selective control achieved with DCPA and RO7-6145; Ronstar not effective in controlling VERONICA FILIFORMIS
REFERENCE: Kaufmann, J.E., "Chemical Control of VERONICA FILIFORMIS in Turf," Proc. N.E. Weed Sci. Soc. 30:340-343 (1976).

<2550>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-
CHEMICAL COMMON NAME: Glyphosate
PLANT: Quackgrass (AGROPYRON REPENS); Grasses; Broadleaf weeds; Arborvitae, Nare's (THUJA OCCIDENTALIS); False cyprus, goldplume (CHAMAECYPARIS PISIFERA); Juniper, Savin (JUNIPERUS SABINA)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Postemergence spray; directed to weed foliage and base of ornamentals
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam
EFFECTS: Slight to moderate control of weeds and none to slight damage of ornamentals
COMMENTS: Long term effective weed control obtained with little or no damage to mature narrowleaf evergreen plants, when glyphosate applied in combination with preemergent herbicides
REFERENCE: Haramaki, C., "Control of Perennial and Annual Weeds in Established Plantings of Narrowleaf Evergreens," Proc. Northeast. Weed Sci. Soc. 31:329-324 (1977).

<2551>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-, calcium salt (2:1)
CHEMICAL COMMON NAME: MON-464
PLANT: Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 1.12, 2.24 and 3.36 kg/ha
APPLICATION METHODS: Application on established sod with a CO(2) sprayer in 336 l./ha water with 0.7% Aerosol OT surfactant (sulfosuccinic acid)
EXPERIMENTAL CONDITIONS: Spring field experiment on 15 year old sod; sod fertilized before treatment; 1.5 X 9.1 m plots in randomized complete block design with 4 replicates
EFFECTS: Significant reduction in height and dry matter yield after 37 and 62 days at all rates; no significant color change after 58 days at any rate
COMMENTS: Possible use in managing highway roadbanks; greenhouse studies determined chemicals for field tests
REFERENCE: Elkins, D.M. and D.L. Suttner, "Chemical Regulation of Grass Growth. I. Field and Greenhouse Studies with Tall Fescue," Agron. J. 66:487-491 (1974).

<2552>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-, calcium salt (2:1)
CHEMICAL COMMON NAME: MON-464
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.12, 2.24 and 3.36 kg/ha
APPLICATION METHODS: Postemergence sprays applied with CO(2) sprayer in 356 l./ha water containing 0.7% Aerosol OT surfactant
EXPERIMENTAL CONDITIONS: Field experiments; spring trials; randomized complete block design with 4 replications; plots--1.5 X 9.0 m
EFFECTS: Significant reduction in height and dry matter yield after 35 and 49 days respectively at all rates; significant color change at all rates after 24 days
COMMENTS: Greenhouse experiments determined chemicals used in field tests; not recommended for lawn use
REFERENCE: Elkins, D.M., J.A. Tweedy, and D.L. Suttner, "Chemical Regulation of Grass Growth. II. Greenhouse and Field Studies with Intensively Managed Turfgrasses," Agron. J. 66:492-497 (1974).

<2553>
<2553>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-, compd. with 2-propanamine (1:1)
CHEMICAL COMMON NAME: MON-139
PLANT: Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 0.14, 0.28 and 0.56 kg/ha
APPLICATION METHODS: Application on established sod with a CO(2) sprayer in 336 l./ha water with 0.7% Aerosol OT surfactant (sulfosuccinic acid)
EXPERIMENTAL CONDITIONS: Spring field experiment on 15 year old sod; sod fertilized before treatment; 1.5 X 9.1 m plots in randomized complete block design with 4 replicates
EFFECTS: Significant reduction in height and dry matter yield after 37 and 62 days at all rates, significant color change after 58 days only at 0.56 kg/ha
COMMENTS: Possible use in managing highway roadbanks; greenhouse studies determined chemicals for field tests
REFERENCE: Elkins, D.M. and D.L. Suttner, "Chemical Regulation of Grass Growth. I. Field and Greenhouse Studies with Tall Fescue," Agron. J. 66:487-491 (1974).

<2554>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-, compd. with 2-propanamine (1:1)
CHEMICAL COMMON NAME: MON-139
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 0.14, 0.28 and 0.56 kg/ha (spring only)
APPLICATION METHODS: Postemergence sprays applied with CO(2) sprayer in 356 l./ha water containing 0.7% Aerosol OT surfactant
EXPERIMENTAL CONDITIONS: Field experiments; fall and spring treatments; randomized complete block design with 4 replications; height measurements and color changes observed in spring trial, dry matter yield also recorded in fall trial
EFFECTS: Significant reduction in height and dry matter yield and significant color change
COMMENTS: Greenhouse experiments determined chemicals used in field tests; not recommended for lawn use
REFERENCE: Elkins, D.M., J.A. Tweedy, and D.L. Suttner, "Chemical Regulation of Grass Growth. II. Greenhouse and Field Studies with Intensively Managed Turfgrasses," Agron. J. 66:492-497 (1974).

<2555>
CHEMICAL NAME: Glycine, N-(phosphonomethyl)-, compd. with 2-propanamine (1:1)
CHEMICAL COMMON NAME: Glyphosate, isopropylamine salt
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 0.5 and 2.0 kg/ha
APPLICATION METHODS: Postemergence spray at a volume rate of 352 l./ha and pressure of 2.1 kg/cm (2)
EXPERIMENTAL CONDITIONS: Greenhouse study; plants watered from above before spraying and from below after spraying; 2 replications; visual assessments at intervals, dry weights determined 8 weeks after spraying
EFFECTS: Lower rate caused chlorosis of small expanding leaves; all expanding leaves died with no regrowth present at high rate; significant reduction in dry weight compared with control, more significant at higher rate
REFERENCE: Clay, D.V., "The Response of Strawberry to a Range of Foliage Acting Herbicides," Proc. Brit. Weed Control Conf. 11:409-416 (1972).

<2556>
CHEMICAL NAME: Glycine, N-(2-butoxyphenyl)-N-(chloroacetyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.58 M; barnyardgrass--4.33 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2557>
CHEMICAL NAME: Glycine, N-(3-acetylphenyl)-N-(chloroacetyl)-ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.99 M; barnyardgrass--4.46 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2558>
CHEMICAL NAME: Glycine, N-(3-butylphenyl)-N-(chloroacetyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.20 M; barnyardgrass--4.19 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2559>
CHEMICAL NAME: Glycine, N-(4-butylphenyl)-N-(chloroacetyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--3.56 M; barnyardgrass--4.02 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2560>
CHEMICAL NAME: Glycine, N-[1,1'-biphenyl]-2-yl-N-(chloroacetyl)-, ethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.55 M; barnyardgrass--4.48 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited to one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<2561>
CHEMICAL NAME: Glycine, N-benzoyl-
CHEMICAL COMMON NAME: Hippuric acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:2000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2562>
CHEMICAL NAME: Glycine, N,N-bis(phosphonomethyl)-
CHEMICAL COMMON NAME: MON-845
PLANT: Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 1.24 (spring only), 2.24, 4.5 and 9.0 (fall only) kg/ha
APPLICATION METHODS: Application on established sod with a CO(2) sprayer in 336 l./ha water with 0.7% Aerosol OT surfactant (sulfosuccinic acid)
EXPERIMENTAL CONDITIONS: Three field experiments--1 and 3 had 15 year old sod, # 2 had 1.5 year old sod; sod fertilized before treatment; 1.5 X 9.1 m plots in randomized complete block design with 4 replications; spring treatments--experimens 1 and 3; fall treatments--experiment 2
EFFECTS: Experiment 1--significant height reduction after 36 days at 2.24 and 4.45 kg/ha, significant color change after 18 days at 2.24 and 4.5 kg/ha and significant reduction in dry matter yield at all 3 rates; experiment 2--significant color change after 56 days, significant height reduction after 36 days and significant dry matter yield reduction after 28 days at all 3 rates; experiment 3--significant height reduction and dry matter yield reduction after 37 and 61 days respectively at all rates, no significant color change after 40 days
COMMENTS: Possible use in managing highway roadbanks; greenhouse studies determined chemicals for field tests
REFERENCE: Elkins, D.M. and D.L. Suttner, "Chemical Regulation of Grass Growth. I. Field and Greenhouse Studies with Tall Fescue," Agron. J. 66:487-491 (1974).

<2563>
CHEMICAL NAME: Glycine, N,N-bis(phosphonomethyl)-
CHEMICAL COMMON NAME: MON-845
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.12 (fall only), 2.24 and 4.5 kg/ha
APPLICATION METHODS: Postemergence sprays applied with CO(2) sprayer in 356 l./ha water containing 0.7% Aerosol OT surfactant
EXPERIMENTAL CONDITIONS: Field experiments; fall and spring treatments; randomized complete block design with 4 replications; height measurements and color changes observed in spring trial, dry matter yield also recorded in fall trial
EFFECTS: Significant reduction in height and dry matter yield and significant color change
COMMENTS: Greenhouse experiments determined chemicals used in field tests; not recommended for lawn use
REFERENCE: Elkins, D.M., J.A. Tweedy, and D.L. Suttner, "Chemical Regulation of Grass Growth. II. Greenhouse and Field Studies with Intensively Managed Turfgrasses," Agron. J. 66:492-497 (1974).

<2564>
CHEMICAL NAME: Glycine, N,N-bis(phosphonomethyl)-
CHEMICAL COMMON NAME: CP-41845
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth

<2564>
<2564> CONT.
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<2565>
CHEMICAL NAME: Guanidine, cyano(methylmercuri)-
CHEMICAL COMMON NAME: Cyano (methylmercuri) guanidine
PLANT: Azalea (RHODENDRON OBTUSUM)
EXPERIMENTAL DOSE: 25 fl oz/100 gal
APPLICATION METHODS: Postemergence spray; 50 WP
EXPERIMENTAL CONDITIONS: Greenhouse study of rooting as affected by root-rot fungus; pot culture; cuttings treated by drenching soil; temperature--24 to 41 C; evaluation time--2 to 5 mos
EFFECTS: Chlorosis; growth reduction of foliage
COMMENTS: Several compounds gave good control of CYLINDROCLADIUM root rot
REFERENCE: Englehard, A.W., "Efficacy of Benzimidazole Dips, Drenches and Sprays for the Control of CYLINDROCLADIUM on Azalea," Plant Dis. Rep. 55(8):679-682 (1971).

<2566>
CHEMICAL NAME: Guanidine, dodecyl-, monoacetate
CHEMICAL COMMON NAME: Dodine
PLANT: Spruce, Colorado (PICEA PUNGENS)
EXPERIMENTAL DOSE: X, 5X, 20X, 40X, and 70X (X=0.5 lb/100 gal)
APPLICATION METHODS: 3 droplets placed on picked fruit
EXPERIMENTAL CONDITIONS: Laboratory study; fruit with stems; stems inserted through vial cap into water; temperatures -- 60, 70, 80, and 90 F; evaluation time -- 3 days
EFFECTS: Necrosis of fruit resulting in spotting
COMMENTS: Azinphosmethyl and dodine caused injury to fruits while DFN did not; azinphosmethyl-DFN mixtures as injurious as azinphosmethyl alone; when azinphosmethyl was mixed with dodine, injury greater than with either chemical alone; phytotoxicity was absent or slight at dilute concentrations but increased in severity with concentration to 70X and with temperature temperature to 90 degrees F.
REFERENCE: Jones, A.L., "Phytotoxicity of Dodine and Azinphosmethyl to Cherry Fruit," Plant Dis. Rep. 57(5):428-431 (1973).

<2567>
CHEMICAL NAME: Guanidine, dodecyl-, monoacetate
CHEMICAL COMMON NAME: Dodine
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 0.6 g/l
APPLICATION METHODS: Postemergence spray to run-off
EXPERIMENTAL CONDITIONS: Greenhouse study; light intensity--21.6 klux; photoperiod--15 hr; 4 sprays at 10 day intervals
EFFECTS: Initial increase of photosynthesis but decreased at 10 days and measurements thereafter
COMMENTS: Multiple sprays of dicofol reduced photosynthesis of apple foliage significantly; reduction greater in Golden Delicious than in 'Delicious'; maximum decline occurred after the second spray and subsequent applications did not cause further decrease; multiple sprays of dodine had no significant influence on photosynthesis
REFERENCE: Sharma, D.P., D.C. Ferree, and F.O. Hartman, "Multiple Applications of Dicofol and Dodine Sprays on New Photosynthesis of Apple Leaves," Hortscience. 12(2):154-155 (1977).

<2568>
CHEMICAL NAME: Guanidine, dodecyl-, monoacetate
CHEMICAL COMMON NAME: Dodine
PLANT: Apple (PYRUS MALUS)
EXPERIMENTAL DOSE: 0.680 and 0.907 kg/100 gal water
APPLICATION METHODS: Pre-cover (0.907 kg/100 gal water) and cover (0.680) sprays
EXPERIMENTAL CONDITIONS: Randomized block design; 6 trees per plot; 8 to 10 sprays each year, approximately equal number of pre-cover and cover sprays; 5 year study
EFFECTS: No significant differences in yield, trunk cross-sectional area, amount of bloom, fruit size, or fruit color; 0.5% of fruit injured during one year of test
REFERENCE: Ross, R.G., A.D. Crowe, and R.P. Longley, "Performance of McIntosh Apple Trees Sprayed with Captan, Dodine, or Pre-cover and Cover Sprays of Dichlone," Can. J. Plant Sci. 49:655-658 (1969).

<2569>
CHEMICAL NAME: Guanidine, methylnitroso-
PLANT: ATROPA BELLADONNA
EXPERIMENTAL DOSE: 1 and 2 mM
APPLICATION METHODS: Seed treatment with 20 ml solution for 16 hrs at 18 plus or minus 2 C
EXPERIMENTAL CONDITIONS: Solution prepared in phosphate buffer, pH adjusted to 6.2; 200 seeds treated in conical glass flasks; seeds washed and planted after treatment; 3 months later, seeds transplanted; M(1) and M(2) plants selfed; several morphological characteristics and alkaloid content studied
EFFECTS: Significant increase in plant height, tiller number, leaf length, leaf number, leaf width, and alkaloid number; variability in alkaloid content of 2 mM compared to control
REFERENCE: Kaul, B.L. and D.K. Choudhary, "The Effect of Chemical Mutagens on Quantitative Characters in ATROPA BELLADONNA," Planta Med. 27(4):337-342 (1975).

<2570>
CHEMICAL NAME: H-25893
CHEMICAL COMMON NAME: H-25893
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, creeping red (FESTUCA RUBRA); Crabgrass (DIGITARIA ISCHAEMUM)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Preemergence spray treatment at 86 gpa with CO(2) sprayer; one 4 lb/A treatment followed by 2 lb/A on June 4
EXPERIMENTAL CONDITIONS: Crabgrass control studies in turfgrass; 4 x 5 ft plot with 3 replications; herbicides applied May 1, injury ratings on August 22
EFFECTS: Single 4 lb/A treatment gave 33% crabgrass control; 4 lb/A followed by 2 lb/A treatment gave 68% crabgrass control; minor turfgrass injury, more pronounced with 2 treatments
COMMENTS: Fescue, bentgrass, and bluegrass tabulated as turfgrass
REFERENCE: Coville, C.M. and J.A. Jagschitz, "Herbicides for Preemergence Crabgrass and Goosegrass Control in Turfgrass--1975," Proc. Northeast. Weed Sci. Soc. 30:367-371 (1976).

<2571>
CHEMICAL NAME: H-26910
CHEMICAL COMMON NAME: H-26910
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, creeping red (FESTUCA RUBRA); Crabgrass (DIGITARIA ISCHAEMUM)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Preemergence spray treatment at 86 gpa with CO(2) sprayer; one 4 lb/A treatment followed by 2 lb/A on June 4
EXPERIMENTAL CONDITIONS: Crabgrass control studies in turfgrass; 4 x 5 ft plot with 3 replications; herbicides applied May 1, injury ratings on August 22
EFFECTS: 8 and 50% crabgrass control at the 4 lb/A and 4 and 2 lb/A treatment, respectively; minor turfgrass injury, approaching moderate injury range
COMMENTS: Fescue, bentgrass, and bluegrass tabulated as turfgrass
REFERENCE: Coville, C.M. and J.A. Jagschitz, "Herbicides for Preemergence Crabgrass and Goosegrass Control in Turfgrass--1975," Proc. Northeast. Weed Sci. Soc. 30:367-371 (1976).

<2572>
CHEMICAL NAME: Haloxydine
CHEMICAL COMMON NAME: Haloxydine
PLANT: Wheat (TRITICUM AESTIVUM); Cotton (GOSSYPIUM HIRSUTUM); Weeds
EXPERIMENTAL DOSE: 150 and 250 g/ha
APPLICATION METHODS: Postemergence spray in 200 l. water; residual toxicity study on cotton
EXPERIMENTAL CONDITIONS: Randomized block design, 7.20 x 2.40 m plots; 10 rows in each plot; 3 replications of each treatment; fertilizers added in recommended doses; periodic irrigation, initial irrigation 21 days after sowing; herbicide applied 18 days after sowing
EFFECTS: Effective weed control; morphological and physiological abnormalities to wheat such as the bending, lossening, rosette formation, and immaturity of ears, the chlorosis of leaves, and the reduced net assimilation rate which reduced yield; reduction in true protein and lipid grain contents and in DNA content of young seedlings; residual toxicity to cotton
COMMENTS: Trade designation, pp (493); combination with 2, 4-D also studied
REFERENCE: Srivastava, A.K. and R. Singh, "Ecological Syndrome of Weedicides in the Wheat-Crop Ecosystem," Indian J. Ecol. 1(1):24-37 (1974).

<2573>
CHEMICAL NAME: Haloxydine
CHEMICAL COMMON NAME: Haloxydine
PLANT: Jackpine (PINUS BANKSIANA); Spruce, black (PICEA MARIANA); Bunchberry (CORNUS CANADENSIS); Willow-herb, great (EPILOBIUM ANGUSTIFOLIUM); Blueberry, late sweet (VACCINIUM ANGUSTIFOLIUM); Honeysuckle, bush (DIERVILLA LONICERA); Tea, Labrador (LEDUM GROENLANDICUM); Leatherleaf (CHEMAEDAPHNE CALYCULATA); Rosemary, bog (ANDROMEDA GLAUCOPHYLLA); Willow (SALIX sp.); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.56, 1.12, 2.24, and 3.36 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse trial--soil collected from pine stand and overwintered, weeds emerged following spring and 2-yr-old blackspruce and 22-wk-old jack pine seedlings planted in plastic tubs; field trial--9.1 m diameter plots established in June, herbicide applied at plot establishment, 45 to 60-yr-old tree stands
EFFECTS: Greenhouse--all plants killed within 40 days, no significant regrowth; field--weeds killed within 18 days, some regrowth at 0.56 kg/ha, needle-tip burn on lower pine and spruce branches
COMMENTS: Haloxydine possibly beneficial for specific forestry purposes; code name PP493
REFERENCE: Winston, D.A. and V.F. Haavisto, "Greenhouse and Field Trials of Gramoxone and PP493 Herbicides on Boreal Forest Vegetation of Northeastern Ontario," Can. For. Serv. Bi-monthly Res. Notes 30(6):37-38 (1974).

<2574>
CHEMICAL NAME: Haloxydine
CHEMICAL COMMON NAME: Haloxydine
PLANT: Cauliflower (BRASSICA OLERACEA); Broccoli (BRASSICA OLERACEA); Speedwell (VERONICA sp.); Chickweed, common (STELLARIA MEDIA); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: Preemergence spray at a volume of 40 gpa
EXPERIMENTAL CONDITIONS: Medium loam soil; split plot design with 3 replications; 10 X 2 yd plot size; atleast 2 visual assessments of treatment effect

<2574>
<2574> CONT.
EFFECTS: Minor injury to crops at 0.5 lb/A, minor injury to cabbage and broccoli and moderate injury to cauliflower at 1.0 lb/A; good weed control, better at 1.0 lb/A
COMMENTS: Not much difference in crop injury at 0.5 and 1.0 lb/A
REFERENCE: Cassidy, J.C., "Herbicide Evaluation in Brassica Crops - 1968-72," Proc. Brit. Weed Control Conf. 11:958-964 (1972).

<2575>
CHEMICAL NAME: HAN
CHEMICAL COMMON NAME: HAN
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 0.1 to 2.5%
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: No adverse effect
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedlings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:78-83 (1962).

<2576>
CHEMICAL NAME: HAN 132
CHEMICAL COMMON NAME: HAN 132
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 0.1 to 2.5%
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: No adverse effect
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:78-83 (1962).

<2577>
CHEMICAL NAME: Heptane
CHEMICAL COMMON NAME: N-heptane
PLANT: Sunflower (HELIANTHUS ANNUUS); Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect
EFFECTS: Severe injury of leaf cells of sunflower but only slight injury of carrot leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2578>
CHEMICAL NAME: Heptane
CHEMICAL COMMON NAME: Normal-heptane
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) at 93.9 and 230x10(-5)M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<2579>
CHEMICAL NAME: Heptane, 2-methyl-3-ethyl-
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Slight damage of leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when

<2579> CONT.
hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2580>
CHEMICAL NAME: Heptane, 2,2,4,6,6-pentamethyl-
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Slight damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2581>
CHEMICAL NAME: Heptanoic acid
CHEMICAL COMMON NAME: Heptoic acid
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: Slight damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2582>
CHEMICAL NAME: Heptene, n-1-
CHEMICAL COMMON NAME: N-hept-1-ene
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Severe damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2583>
CHEMICAL NAME: Hercules 25893
CHEMICAL COMMON NAME: Hercules 25893
PLANT: Crabgrass (DIGITARIA ISCHAEMUM); Bluegrass, Kentucky (POA PRATENSIS); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 4.48 kg/ha; 2% EC
APPLICATION METHODS: Preemergence spray (40 psi and 50 gal/A) and granule broadcast
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; evaluation time--up to 5 mo
EFFECTS: Moderate crabgrass control with slight or no damage to turfgrasses
COMMENTS: Best control of crabgrass in both turf species obtained by DCPA, butralin, AC-92390, and prosulfalin; all rates of granular HOE-22870 provided good crabgrass control in red fescue; in bluegrass, HOE-22870 controlled crabgrass only at the high rate or when the low rate was reapplied
REFERENCE: Watschke, T.L., D.J. Wehner, and J.M. Duich, "Pre- and Postemergence Crabgrass Control in Turf," Proc. NE Weed Sci. Soc. 30:358-366 (1976).

<2584>
<2584>
CHEMICAL NAME: Hercules 26910
CHEMICAL COMMON NAME: Hercules 26910
PLANT: Grasses; Broadleaf weeds; Purslane, common (PORTULACA OLERACEA); Crabgrass (DIGITARIA sp.); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Groundsel, common (SENECIO VULGARIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Azalea (RHODENDRON OBTUSUM); Andromeda (PIERIS JAPONICA); Maple, amur (ACER GINNALA); Maple, Japanese (ACER PALMATUM); Juniper (JUNIPERUS CHINENSIS); Holly (ILEX CRENATA); Privet, California (LIGUSTRUM OVALIFOLIUM); Firethorn (PYRACANTHA COCCINEA); Yew (TAXUS INTERMEDIA); Hemlock, Canadian (TSUGA CANADENSIS); Pine, Japanese black (PINUS THUNBERGII); Honeysuckle, gold flame (LONICERA HECKROTTI); Dogwood, flowering (CORNUS FLORIDA); Goldenbells (FORSYTHIA INTERMEDIA); Hydrangea (HYDRANGEA PANICULATA)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A; 4% EC
APPLICATION METHODS: Postemergence spray, TeeJet nozzle; shaker broadcast for granular
EXPERIMENTAL CONDITIONS: Field study; nursery liners
EFFECTS: Effective control generally of grasses and moderate control of broadleafs with moderate to severe damage to ornamentals particularly at 4.0 lb/A
COMMENTS: Alachlor and alachlor plus simazine combinations gave nearly complete weed control without injury to test plants; combinations of other herbicides with simazine also effective; Velsicol 5052 very effective against all plants, including nursery plants
REFERENCE: Bing, A., "1976 Preemergence Weed Control in Nursery Liners," Proc. Northeast Weed Sci. Soc. 31:320-325 (1977).

<2585>
CHEMICAL NAME: Hexadecane
CHEMICAL COMMON NAME: N-hexadecane
PLANT: Sunflower (HELIANTHUS ANNUUS); Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect
EFFECTS: No damage to leaf cells of sunflower or carrot.
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2586>
CHEMICAL NAME: Hexadecene, n-1-
CHEMICAL COMMON NAME: N-hexadec-I-ene
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Slight damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2587>
CHEMICAL NAME: Hexane
CHEMICAL COMMON NAME: N-hexane
PLANT: Sunflower (HELIANTHUS ANNUUS); Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect
EFFECTS: Severe injury of leaf cells of sunflower but only slight injury of carrot leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2588>
CHEMICAL NAME: Hexane, cyclo-
CHEMICAL COMMON NAME: Cyclohexane
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Severe damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2589>
CHEMICAL NAME: Hexane, 2,2,5-trimethyl
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Severe injury to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2590>
CHEMICAL NAME: Hexanedioic acid
CHEMICAL COMMON NAME: Adipic acid
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Moderate damage of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<2591>
CHEMICAL NAME: Hexanedioic acid, 2,2,3,3,4,5-hexafluoro-, compd. with benzenamine (1:2), (R*,R*)-(plus or minus)-
CHEMICAL COMMON NAME: Glycolic acid, sodium salt
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<2592>
CHEMICAL NAME: Hexanoic acid
CHEMICAL COMMON NAME: Hexanoic acid
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: Slight damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and

<2592>
<2592> CONT.
certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2593>
CHEMICAL NAME: Hexene, cis-
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.3 mM
APPLICATION METHODS: Plants grown in solution containing chemical being tested
EXPERIMENTAL CONDITIONS: After germination in petri dishes, seedlings transplanted to reagent tube containing 6 g vermiculite and 25 ml Hoagland solution 2 that included 0.3 mM of chemical being tested; plants grown in growth chamber--16 hr photoperiod, 25 C day temperature and 12 C night temperature
EFFECTS: Strongly toxic to wild oat
COMMENTS: General toxic effects reported for all chemicals studied--growth retardation, tip burn followed by leaf scorch and death
REFERENCE: Chen, S-C. and R.M. Elofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<2594>
CHEMICAL NAME: Hexene, cyclo-
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.3 mM
APPLICATION METHODS: Plants grown in solution containing chemical being tested
EXPERIMENTAL CONDITIONS: After germination in petri dishes, seedlings transplanted to reagent tube containing 6 g vermiculite and 25 ml Hoagland solution 2 that included 0.3 mM of chemical being tested; plants grown in growth chamber--16 hr photoperiod, 25 C day temperature and 12 C night temperature
EFFECTS: Moderately toxic
COMMENTS: General toxic effects reported for all chemicals studied--growth retardation, tip burn followed by leaf scorch and death
REFERENCE: Chen, S-C. and R.M. Elofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<2595>
CHEMICAL NAME: Hexene, trans-
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.3 mM
APPLICATION METHODS: Plants grown in solution containing chemical being tested
EXPERIMENTAL CONDITIONS: After germination in petri dishes, seedlings transplanted to reagent tube containing 6 g vermiculite and 25 ml Hoagland solution 2 that included 0.3 mM of chemical being tested; plants grown in growth chamber--16 hr photoperiod, 25 C day temperature and 12 C night temperature
EFFECTS: Moderately toxic
COMMENTS: General toxic effects reported for all chemicals studied--growth retardation, tip burn followed by leaf scorch and death
REFERENCE: Chen, S-C. and R.M. Elofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<2596>
CHEMICAL NAME: Hexulofuranosonic acid, 2,3:4,6-bis-O-(1-methylethylidene)-alpha-L-xylo-2-, sodium salt
CHEMICAL COMMON NAME: Dikegulac
PLANT: (CALLISTEMON CITRINUS); (XYLOSTOMA CONGESTUM); (NERIUM OLEANDER); Cotoneaster, Peking (COTONEASTER ACUTIFOLIA); Firethorn (PYRACANTHA COCCINEA); (EUCALYPTUS GLOBUSUS); Ash (FRAXINUS UHDEI); Elm (ULMUS PARVIFLORA)
EXPERIMENTAL DOSE: 0.10, 0.25, 0.50, and 1.00% aqueous solutios; 0.1% X-77 surfactant
APPLICATION METHODS: Postemergence spray to runoff
EXPERIMENTAL CONDITIONS: Field study; greenhouse study
EFFECTS: Pronounced inhibition of branch (field) or shoot (greenhouse) elongation for most test species at all rates for up to 89 days
COMMENTS: Foliar aplication of dikegulac-sodium inhibited elongation at bud break for more than 3 months in XYLOSMA, PYRACANTHA, COTONASTER, and NERIUM; phytotoxic symptoms minor in most species but NERIUM; chlorosis of young leaves and necrotic areas on tips of half expanded leaves noted
REFERENCE: Sachs, R.M., H. Hield, and J. DeBie, "Dikegulac: A Promising New Foliar-Applied Growth Regulator for Woody Species," Hortscience 10(4):367-369 (1975).

<2597>
CHEMICAL NAME: Histidine, L-, monohydrochloride
CHEMICAL COMMON NAME: Histidinehydrochloridemono
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2598>
CHEMICAL NAME: Histone, type IIA
CHEMICAL COMMON NAME: Histone
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 0.05 and 0.10 mg
APPLICATION METHODS: Addition to reaction mixture
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: Inhibited photoreactions
COMMENTS: Histones and other polycations inhibited Photosystem I reactions of isolated chloroplasts; Photosystem II activity readily measured in preparations where histone completely blocked Photosystem I activity
REFERENCE: Brand, J., T. Bazynski, F.L. Crane, and D.W. Krogman, "Photosystem I Inhibition by Polycations," Biochem. Biophys. Res. Comm. 45(2):538-543 (1971).

<2599>
CHEMICAL NAME: HOE-22870
CHEMICAL COMMON NAME: HOE-22870
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, creeping red (FESTUCA RUBRA); Crabgrass (DIGITARIA ISCHAEMUM)
EXPERIMENTAL DOSE: 4, 6, and 12 lb/A
APPLICATION METHODS: Hand applied granular treatments at 4, 4 followed by 4 on June 4, 6, and 12 lb/A; spray treatments at 86 gpa--4, 4 followed by 4 on June 4, and 4 lb/A; all treatments preemergence
EXPERIMENTAL CONDITIONS: Crabgrass control studies in turfgrass; 4 x 5 ft plot with 3 replications; herbicides applied May 1, injury ratings on August 22
EFFECTS: Moderate crabgrass control except for 12 lb/A and the 2 repeated 4 lb/A treatments--exceptions gave good control; minor turfgrass injury
COMMENTS: Fescue, bentgrass, and bluegrass tabulated as turfgrass
REFERENCE: Coville, C.M. and J.A. Jagschitz, "Herbicides for Preemergence Crabgrass and Goosegrass Control in Turfgrass--1975," Proc. Northeast. Weed Sci. Soc. 30:367-371 (1976).

<2600>
CHEMICAL NAME: Human chorionic gonadotrophin
CHEMICAL COMMON NAME: Gonadotropin, human chorionic
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 3 to 280 IU/dish
APPLICATION METHODS: Addition to seed homogenates
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Inhibited alpha-amylase production at 140 IU/dish but did not affect alpha-amylase activity
COMMENTS: HCG inhibited alpha-amylase production in intact germinating grains by 50%
REFERENCE: Duffus, C.M., J.H. Duffus, and A.H. Orr, "Inhibition of Gibberellic Acid Biosynthesis by Chorionic Gonadotrophin during Cereal Grain Germination," Experimentia 26:1296-1297 (1970).

<2601>
CHEMICAL NAME: Hydrazide, isonicotinyl
CHEMICAL COMMON NAME: Isonicotinyl hydrazide
PLANT: Corn (ZEA MAYS) ; Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 10.0 micro M
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Inhibited synthesis of chlorophyll and carotene pigments
COMMENTS: Inhibited pigment synthesis in maize and in barley; in maize inhibition of greening in presence of isonicotinyl hydrazide not overcome by addition of glycollate or glycine, but restored by serine and pyruvate; results similar in barley with difference that only pyruvate would restore pigment formation; isonicotinyl hydrazide thus inhibited pigment
REFERENCE: Gore, M.G., R.B. Evans, H.M. Hill, and L.J. Rogers, "The Effect of Isonicotinyl Hydrazide on the Greening of Maize and Barley," Biochem. J. 121:7-8 (1971).

<2602>
CHEMICAL NAME: Hydrazide, isonicotinyl
CHEMICAL COMMON NAME: Isonicotinyl hydrazide
PLANT: Barley (HORDEUM VULGARE); Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 350 ppm (barley); 1X10(-4) and 1X10(-3) M (bean)
APPLICATION METHODS: Addition to root culture system (barley); droplets on base of unifoliate leaf or leaf immersion (bean)
EXPERIMENTAL CONDITIONS: Laboratory study; applied to barley 24 hr after seeds moistened and roots measured 5

<2602>
<2602> CONT.
days later
EFFECTS: Inhibition of barley root growth but no effect on bean
COMMENTS: INH observed to be active inhibitor of root growth; in aerated water cultures, roots of barley seedlings grown for 5 days in dark inhibited 50 percent
REFERENCE: Norman, A.G., "Effect of Isonicotinic Acid Hydrazide on Some Plant Systems," Sci. 121:834 (1955).

<2603>
CHEMICAL NAME: Hydrazine
CHEMICAL COMMON NAME: Hydrazine
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 3.0 and 5.0 mM
APPLICATION METHODS: Immersion in test solutions for 24 hr
EXPERIMENTAL CONDITIONS: Laboratory seed soak; seed planted in field and germination as well as mutations M(1) determined; seeds from M(1) planted and mutations M(2) determined
EFFECTS: Inhibited germination and induced mutations
COMMENTS: Treatments administered alone or in presence of maleic hydrazide and X-rays; hydrazine produced chlorophyll mutations in M(1)-generation itself if applied alone, in a mixture, or as last treatment in sequence; in the M(2)-generation, segregation for chlorophyll mutations observed in all treatments
REFERENCE: Kak, S.N. and B.L. Kaul, "Mutagenic Activity of Hydrazine and Its Combinations With Maleic Hydrazide and X-Rays in Barley," Cytobios 12:123-128 (1975).

<2604>
CHEMICAL NAME: Hydrazine, 1-phenyl-2-phenylsulfonyl-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Slight phytotoxic effect of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<2605>
CHEMICAL NAME: Hydrazinecarboxamide, N-(2-chlorophenyl)-1-methyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2606>
CHEMICAL NAME: Hydrazinecarboxamide, N-(2-chlorophenyl)-2,2-dimethyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2607>
CHEMICAL NAME: Hydrazinecarboxamide, N-(2-methylphenyl)-1-methyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2608>
CHEMICAL NAME: Hydrazinecarboxamide, N-(2-methylphenyl)-2,2-dimethyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2609>
CHEMICAL NAME: Hydrazinecarboxamide, N-(2-nitrophenyl)-1-methyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2610>
CHEMICAL NAME: Hydrazinecarboxamide, N-(2-nitrophenyl)-2,2-dimethyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2611>
CHEMICAL NAME: Hydrazinecarboxamide, N-(3-chlorophenyl)-1-methyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2612>
CHEMICAL NAME: Hydrazinecarboxamide, N-(3-chlorophenyl)-2,2-dimethyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2613>
CHEMICAL NAME: Hydrazinecarboxamide, N-(3-methylphenyl)-1-methyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A

<2613>
<2613> CONT.
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2614>
CHEMICAL NAME: Hydrazinecarboxamide, N-(3-methylphenyl)-2,2-dimethyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2615>
CHEMICAL NAME: Hydrazinecarboxamide, N-(3-nitrophenyl)-1-methyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2616>
CHEMICAL NAME: Hydrazinecarboxamide, N-(3-nitrophenyl)-2,2-dimethyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2617>
CHEMICAL NAME: Hydrazinecarboxamide, N-(3,4-dichlorophenyl)-1-methyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2618>
CHEMICAL NAME: Hydrazinecarboxamide, N-(3,4-dichlorophenyl)-2-cyclohexyl
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2619>
CHEMICAL NAME: Hydrazinecarboxamide, N-(3,4-dichlorophenyl)-2,2-dimethyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2620>
CHEMICAL NAME: Hydrazinecarboxamide, N-(4-bromophenyl)-1-methyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2621>
CHEMICAL NAME: Hydrazinecarboxamide, N-(4-bromophenyl)-2,2-dimethyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2622>
CHEMICAL NAME: Hydrazinecarboxamide, N-(4-chlorophenyl)-2-cyclohexyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2623>
CHEMICAL NAME: Hydrazinecarboxamide, N-(4-chlorophenyl)-2,2-dimethyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2624>
CHEMICAL NAME: Hydrazinecarboxamide, N-(4-fluorophenyl)-2,2-dimethyl
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A

<2624>
<2624> CONT.
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2625>
CHEMICAL NAME: Hydrazinecarboxamide, N-(4-methoxyphenyl)-1-methyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2626>
CHEMICAL NAME: Hydrazinecarboxamide, N-(4-methoxyphenyl)-2,2-dimethyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2627>
CHEMICAL NAME: Hydrazinecarboxamide, N-(4-methylphenyl)-1-methyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2628>
CHEMICAL NAME: Hydrazinecarboxamide, N-(4-methylphenyl)-2,2-dimethyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2629>
CHEMICAL NAME: Hydrazinecarboxamide, N-(4-nitrophenyl)-1-methyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2630>
CHEMICAL NAME: Hydrazinecarboxamide, N-(4-nitrophenyl)-2,2-dimethyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrizine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2631>
CHEMICAL NAME: Hydrazinecarboxamide, 1-methyl-N-phenyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2632>
CHEMICAL NAME: Hydrazinecarboxamide, 2-cyclohexyl-N-phenyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2633>
CHEMICAL NAME: Hydrazinecarboxamide, 2,2-dimethyl-N-phenyl-
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Corn (ZEA MAYS); Lettuce (LACTUCA SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Mustard, Chinese (BRASSICA JUNCEA)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Dissolved in methanol and applied preemergence
EXPERIMENTAL CONDITIONS: Greenhouse study; untreated controls, methanol-treated controls, and standards of the herbicides diuron and atrazine at 10 lb/A
EFFECTS: No phytotoxicity
COMMENTS: Diuron and atrazine treated plants showed phytotoxicity after 5 days; after 7 weeks, all diuron treated plants died and only corn survived in atrazine test
REFERENCE: Wilcox, M. "Synthesis and Herbicidal Activity of 1,1-Dimethyl- and 2-Methyl-4-phenylsemicarbazides," J. Med. Chem. 11:171-172 (1968).

<2634>
CHEMICAL NAME: Hydrochloric acid
CHEMICAL COMMON NAME: HCl
PLANT: Aster (CALLISTEPHUS CHINENSIS); Calendula (CALENDULA OFFICINALIS); Cornflower (CENTUREA CYANUS); Cosmos (COSMOS BIPINNATUS); Marigold, French (TAGETES PATULA); Marigold, American (TAGETES ERECTA); Nasturtium (TROPAEOLUM MAJUS); Zinnia (ZINNIA ANGUSTIFOLIA)
EXPERIMENTAL DOSE: 9 to 45 mg HCl/m(3) for 20 min
APPLICATION METHODS: Fumigation exposure
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--24 to 48 hr
EFFECTS: At 1.5 to 9.0 mg HCl/m(3), leaf necrosis of aster, cosmos, and marigolds with leaf discoloration of calendula, nasturtium, and zinnia; no apparent effect on centaurea at this exposure level
COMMENTS: Cosmos and marigolds most sensitive to HCl; plant injury extimated at 10% level caused by 20 min exposure to 6.5 and 8.7 mg HCl/m(3)
REFERENCE: Lerman, S., O.C. Taylor, and E.F. Darley, "Phototoxicity of Hydrogen Chloride Gas with a Short-Term Exposure," Atmos. Envir. 10(10):873-878 (1976).

<2635>
<2635>
CHEMICAL NAME: Hydrocyanic acid
PLANT: Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 1.0, 2.0, 2.5, and 3.0 lb/1000 cu ft
APPLICATION METHODS: Seeds fumigated in 100-cubic-ft gas-tight chambers for 72 hr
EXPERIMENTAL CONDITIONS: Seeds dried to desired moisture content; seeds fumigated with 50% receiving a second fumigation 21 days later; germination tests within 5 days after fumigation and also after 84 days in storage
EFFECTS: No germination reduction
REFERENCE: Strong, R.G. and D.L. Lindgren, "Effect of Methyl Bromide and Hydrocyanic Acid Fumigation on the Germination of Rice," J. Econ. Entomol. 52(4):706-710 (1959).

<2636>
CHEMICAL NAME: Hydrocyanic acid
CHEMICAL COMMON NAME: Hydrocyanic acid
PLANT: Orange, navel (BREVIPALPUS CALIFORNICUS)
EXPERIMENTAL DOSE: 16 to 23 ml/100 cubic ft
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Field study; orange orchards
EFFECTS: No adverse effect on orange yield
COMMENTS: Fumigation of citrus trees with HCN either in fall or winter, had no marked effect on chemical composition of the mature fruit; oil sprays with and without toxicants equally effective in reducing soluble constituents in fruit
REFERENCE: Sinclair, W.B., E.T. Bartholomew, and W. Ebeling, "Comparative Effects of Oil Spray and Hydrocyanic Acid Fumigation on the Composition of Orange Fruits," J. Econ. Ent. 34(6):821-829 (1941).

<2637>
CHEMICAL NAME: Hydrofluoric acid
CHEMICAL COMMON NAME: HF
PLANT: Bean, snap (PHASEOLUS VULGARIS); Barley (HORDEUM VULGARE); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.00049 to 0.00072 mg F/m(3)
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--24 C; RH--70%; light intensity--25.4 Klux; photoperiod--16 hr; evaluation time--24 hr to 27 da
EFFECTS: Relatively slight leaf necrosis at 0.0007 mg F/m(3) and 27 da exposure of barley and corn but no damage to bean leaves
COMMENTS: When high concentrations of SO(2) used, severe injury occurred on corn and barley leaves; the combination of SO(2) and HF did not alter foliar symptom production; beans not injured by any of the treatments; with lower concentrations of SO(2), foliar response of barley and corn accentuated by combination SO(2) and HF
REFERENCE: Mandl, R.H., L.H. Weinstein, and M. Keveny, "Effects of Hydrogen Fluoride and Sulfur Dioxide Alone and in Combination on Several Species of Plants," Environ. Pollut. 9(2):133-143 (1975).

<2638>
CHEMICAL NAME: Hydroxamic acid, N-methyl-2,4-D
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 1.0, 2.5, and 5.0X10(-3)M (3 ml/plant)
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Death at all applicable rates for most proximal root sections but no effect on most distal root sections
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

<2639>
CHEMICAL NAME: Hydroxamic acid, O-methyl-2,4-D
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 1.0, 2.5, and 5.0X10(-3)M (3 ml/plant)
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Plant death at all application rates for most proximal root sections but little effect on distal root sections except at 2 highest concentrations
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

<2640>
CHEMICAL NAME: Hydroxamic acid, O,N-dimethyl-2,4-D
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 1.0, 2.5, and 5.0X10(-3)M (3 ml/plant)
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Death at all applicable rates for most proximal root sections but no effect on most distal root sections
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

<2641>
CHEMICAL NAME: Hydroxamic acid, 2,4-D
CHEMICAL COMMON NAME: 2,4-D hydroxamic acid
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 1.0, 2.5, and 5.0X10(-3)M (3 ml/plant)
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Plant death at all application rates for most proximal root sections but little effect on distal root sections except at 2 highest concentrations
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

<2642>
CHEMICAL NAME: Hydroxamic acid, 2,6-dichlorophenyl-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: 10(-4) M extremely toxic to clover, alfalfa, and pigweed, strongly toxic to ryegrass, tomatoes and mustard; minor or no phytoxicity at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<2643>
CHEMICAL NAME: Hydroxylamine
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 10 ug/ml
APPLICATION METHODS: Injections into upper culm of individual tillers of trisomic stock (trisomics 3 and 7)
EXPERIMENTAL CONDITIONS: Application during meiosis; 5 ml/100 ml of solution of 0.01% 'Tween 20' added to hydroxylamine as wetting agent; control tillers injected with distilled water and 'Tween 20'
EFFECTS: Complete sterility of 15 plants of trisomic 3; drastically reduced seed-set on 13 plants of trisomic 7; slightly lower seed set in control than non-treated trisomic plants
COMMENTS: Trisomic plant has extra chromosome
REFERENCE: Sayed, H.I., S.B. Helgason, and E.N. Larter, "Effect of Gamma Rays and Some Chemical Mutagens on Induction of Telotrisomics in Hordeum," Can. J. Genet. Cytol. 15:815-824 (1973).

<2644>
CHEMICAL NAME: ICS-3510
CHEMICAL COMMON NAME: ICS 3510
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA)
EXPERIMENTAL DOSE: 0.4-5.0 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Neither satisfactory weed control nor crop tolerance obtained in preplanting or preemergence application
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave

<2644>
<2644> CONT.
excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<2645>
CHEMICAL NAME: Imidazole, 1H-
CHEMICAL COMMON NAME: Imidazole
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1x10(-3) M
APPLICATION METHODS: 96-hr treatment at 25 C
EXPERIMENTAL CONDITIONS: Primary root elongation inhibition determined
EFFECTS: No inhibition
REFERENCE: Klingensmith, M.J., "The Effect of Certain Benzazole Compounds on Plant Growth and Development," Am. J. Bot. 48:40-45 (1961).

<2646>
CHEMICAL NAME: Imidocarbonic acid, phosphonodithio-, cyclic methylene, P,P-diethyl ester
CHEMICAL COMMON NAME: AC64475
PLANT: Spangletop, bearded, (LEPTOCHLOA FASCICULARIS)
EXPERIMENTAL DOSE: 2.8 to 22.4 kg/ha
APPLICATION METHODS: Preplant incorporated (3 to 4 cm depth) by subsurface insecticide applicator; 15% G formulation
EXPERIMENTAL CONDITIONS: Field study; rutabagas harvested after 60 days at 30-day intervals thereafter; whole, sliced, and peelings used to evaluate insecticide persistence with first instar maggots of HYLEMA BRASSICAE
EFFECTS: Rutabaga plants destroyed at high rates
COMMENTS: At high rates, phytotoxicity recorded for all compounds except trichloronat and fonofos; phytotoxicity so severe with AC64475 that all plants destroyed with rates in excess of 11.2 kg/acre
REFERENCE: Read, D.C., "Toxicity of Carbamate and Organophosphorus Insecticide Residues Absorbed by Rutabagas Grown in Treated Soil," Can. Entmol. 106(7):1319-1325 (1974).

<2647>
CHEMICAL NAME: Imidodicarbonic diamide
CHEMICAL COMMON NAME: Biuret
PLANT: Radish (RAPHANUS SATIVUS); Ryegrass, perennial (LOLIUM PERENNE); Bentgrass, black (AGROSTIS GIGANTEA); Plants; Redtop (AGROSTIS ALBA); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 3.0, 4.0, and 5.0 lb/1000 sq ft
APPLICATION METHODS: Added to soil
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: At 5.0 lb rate, effective weed control but delayed germination of test plants
COMMENTS: Several fertilizers and chemicals inhibited weed growth either by killing seeds or by killing seedlings shortly after germination; materials applied dry or as spray solutions and thoroughly mixed by cultivation or raking into upper 2 or 3 inches of soil; period of time after treatment before grass, radishes, alfalfa, or seedlings of tomato, cabbage, or other crops could be planted safely varied with different materials and amounts applied; sterilizing soils with fertilizers or chemicals appears very practical method of controlling weeds and fertilizing seedbeds in one operation; especially true of fertilizers which do not appreciably alter soil complex and which do not leave residual toxicity for long periods
REFERENCE: DeFrance, J.A., R.S. Bell, and T.E. Odland, "Killing Weed Seeds in the Grass Seedbed by the Use of Fertilizers and Chemicals," J. Am. Soc. Agron. 39:530-535 (1947).

<2648>
CHEMICAL NAME: Indole-3-acetic acid, 1H-
CHEMICAL COMMON NAME: IAA
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.01 and 0.1 mM
APPLICATION METHODS: Solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated protoplasts from dark-grown oat coleoptiles
EFFECTS: Rapid bursting of protoplasts
COMMENTS: Isolated colcoptile protoplasts rapidly burstat 0.01mM; after 5 min there was 100% bursting of auxin-treated protoplasts and in control only 2%; at 0.1mM bursting slightly less rapid but after 20 min again 100% bursting of auxin-treated protoplasts and in control 3% bursting
REFERENCE: Hall, M.D. and E.C. Cocking, "The Bursting Response of Isolated Avena Coleoptile Protoplasts to Indol-3-ylacetic Acid," Biochem. J. 124:33 (1971).

<2649>
CHEMICAL NAME: Indole-3-acetic acid, 1H-
CHEMICAL COMMON NAME: IAA
PLANT: Pea, scurf (PSORALEA CORYLIFORA)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Solutions applied to seed
EXPERIMENTAL CONDITIONS: Environmental chamber; seed germination in petri plates with filter paper; temperature--35 C; continuous light; scarification by abrasion and chemically; soaking in test solutions for 8 hr
EFFECTS: Reduced germination (at least 50%) at a concentration between 10 and 50 ppm; 8 hr soak of scarified seed

<2649> CONT.
COMMENTS: Inhibition of germination of acid-scarified pods increased with increase in concentration; inhibition irreversible and led to death of seed in pod; mortality, expressed as percentage of dead pods, highest for 2,4,5-T and IAA and lowest for GA.
REFERENCE: Shukla, S.P., "The Effects of Some Chemicals on the Germination of a Weed, PSORALEA CORYLIFOLIA L.," Weed Res. 12(4):293-300 (1972).

<2650>
CHEMICAL NAME: Indole-3-acetic acid, 1H-
CHEMICAL COMMON NAME: IAA
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS); Willow (SALIX sp.); Oat (AVENA SATIVA); Cress (LEPIDIUM SATIVUM); Mustard, white (BRASSICA ALBA)
EXPERIMENTAL DOSE: 1:1000 to 1:500,000
APPLICATION METHODS: Solution-saturated cotton placed on petiole of intact tomato and bean plants; willow shoots placed in solutions; pre-germinated seed (36 hr) of oats, cress, and mustard placed in test solutions
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Petiole bending of tomato and bean; enhanced rooting of willow at 1:100,000; reduced growth of oats, cress, and mustard at 1:10,000
COMMENTS: Heteroauxin and homologue beta-indolylpropionic acid caused epinastic curvatures of tomato, but not other indole derivatives of ascorbic acid; all compounds found effective in stimulating root development in willow branches, ascorbic being also effective for shoots; vitamin C produced maximum effect, closely followed by heteroauxin and more remotely by the other indole derivatives; only low concentrations stimulating; high concentrations lethal or at least retarding
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2651>
CHEMICAL NAME: Indole-3-acetic acid, 1H-
CHEMICAL COMMON NAME: IAA
PLANT: Water fern (AZOLLA MEXICANA)
EXPERIMENTAL DOSE: 0.0001 to 100 mg/l; K salt
APPLICATION METHODS: Intact plants floating on surface of solutions of test chemicals in Hoagland's nutrient medium with weekly solution
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--three wk
EFFECTS: Reduced vegetative fragmentation at lower concentrations but increased fragmentation at 10 mg/l and death at 100 mg/l
COMMENTS: GA inhibited natural fragmentation of water fern through prevention of or decrease in rate of senescence of older plant parts; fragmentation essentially prevented at concentration of 0.1 mg/l or higher in three-week period; inhibition of fragmentation accompanied by decreases in fresh and dry weight only at higher sub-lethal concentrations; IAA causes slight reduction in fragmentation at lower concentration but 10 mg/l increased fragmentations; fresh and dry weights not affected greatly below lethal 100 mg/l concentration
REFERENCE: Dusek, W.A. and E.K. Bonde, "Effects of Gibberellic Acid, Indoleacetic Acid, and Maleic Hydrazide on AZOLLA MEXICANA," Phyton 22(1):51-54 (1965).

<2652>
CHEMICAL NAME: Indole-3-acetic acid, 1H-
CHEMICAL COMMON NAME: IAA
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.5 mg/l.
APPLICATION METHODS: Immersion of wheat coleoptiles for up to 120 hr
EXPERIMENTAL CONDITIONS: Laboratory study; coleoptiles of different ages (up to 120 hr) studied
EFFECTS: Stimulation of template activity in younger seedlings and inhibition in older seedlings
COMMENTS: RNA synthesis occurs on template of chromatin isolated from wheat shoots and was inhibited by actinomycin D, RNase, and rifamycin; IAA and GA appear to have different effects on changes of template activity of chromatin in cells of different ages
REFERENCE: Likholat, T.V. and V.A. Pospelov, "The Influence of B-Indoleacetic Acid and Gibberellin on the Template Activity of the Chromatin of Wheat Coleoptiles of Different Ages," FEBS Letters 40(1):77-79 (1974).

<2653>
CHEMICAL NAME: Indole-3-acetic acid, 1H-
CHEMICAL COMMON NAME: IAA
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1X10(-5)M
APPLICATION METHODS: Solution immersion
EXPERIMENTAL CONDITIONS: Laboratory study; sections of etiolated pea hypocotyls immersed in solutions; 250 mg/5 ml; evaluation time--24 hr; temperature--25C
EFFECTS: Increased growth but no effect on respiration
COMMENTS: Activity of IAA in control series increased to same extent as fresh matter, i.e. by about 40%; Phosfon 1) and CCC decreased growth by about 50% and did not significantly increase activity of IAA; coumrin inhibited synthesis of enzyme; of growth stimulators tested, only gibberellic acid (GA-3) significantly decreased activity of IAA in CCC series
REFERENCE: Knypl, J.S. and A. Rennert, "Growth Inhibitors and the Indole-3-acetic Acid Oxidase Contents of Cucumber Hypocotyl Sections," Kurse 54:544 (1967).

<2654>
<2654>
CHEMICAL NAME: Indole-3-acetic acid, 1H-
CHEMICAL COMMON NAME: IAA
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 1 ppm
APPLICATION METHODS: Submersion of oat coleoptiles
EXPERIMENTAL CONDITIONS: Laboratory study; oat coleoptile assay--increased or inhibited growth of 3mm sections in solutions containing sucrose, IAA, and experimental compounds; coleoptile age--66-69 hr (and at other times)
EFFECTS: Growth stimulation
COMMENTS: Most organic acids accelerated growth in absence of inhibitor but in presence of auxin and sucrose or auxin alone, inhibition of growth by low concentrations of iodoacetate and reversal of inhibition by certain organic acids; sensitivity of sections both to inhibitor and to growth promoting effect of the acids varied with age of the plants; lowest concentration causing definite inhibition steadily decreased with increasing age
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. I. The Action of Iodoacetate and Organic Acids on the AVENA Coleoptile," Am. J. Bot. 35:271-281 (1948).

<2655>
CHEMICAL NAME: Indole-3-acetic acid, 1H-
CHEMICAL COMMON NAME: IAA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<2656>
CHEMICAL NAME: Indole-3-acetic acid, 1H-
CHEMICAL COMMON NAME: IAA
PLANT: Marijuana (CANNIBIS SATIVA)
EXPERIMENTAL DOSE: 25 and 250 ppm
APPLICATION METHODS: Topical application (1 ml) to uppermost leaves
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse or other effects noted
COMMENTS: Gibberellic acid caused significant increase in height and decrease in weight of leaves and tetrahydrocannabinol content; indoleacetic acid produced no significant changes
REFERENCE: Masoud, A.N., N.J. Doorenbos, and M.W. Quimby, "Mississippi-Grown CANNABIS SATIVA L. IV: Effects of Gibberellic Acid and Indoleacetic Acid," J. Pharm. Sci. 62(2):316-318 (1973).

<2657>
CHEMICAL NAME: Indole-3-acetic acid, 1H-
CHEMICAL COMMON NAME: IAA
PLANT: Kalanchoe (KALANCHOE DIAGREMONTIANA); (BRYOPHYLLUM CALYCINUM); (NICOTINIA GLAUCA); Sunflower (HELIANTHUS ANNUUS); Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.0 to 3.0% in hydrous lanolin
APPLICATION METHODS: Lanolin applied to decapitated plants or to injured (needle prick) stem soft tissue
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Varied cancerous growths induced in plants with carcinogenic agents or growth substances
COMMENTS: Scharlach red found active in some cases with KALANCHOV DAIGREMONTIANA; application to apical internode after decapitation produced overgrowths which resembled crown galls; other carcinogens like 1,2,5,6-dibenzanthracene,3,4-benzpyrene, methylcholanthrene induced necrosis of treated zone; indoleacetic acid in lanolin on decapitated and injured stems induced root formation; stems cracked and samll nodular masses formed; small overgrowths on decapitated kalanchoes present histological pictures identical with crown gall
REFERENCE: Levine, M., "Plant Responses to Carcinogenic Agents and Growth Substances: Their Relation to Crown Gall and Cancer," Bull. Torrey Bot. Club 67:199-226 (1940).

<2658>
CHEMICAL NAME: Indole-3-acetic acid, 1H-
CHEMICAL COMMON NAME: IAA
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 3.70 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<2659>
CHEMICAL NAME: Indole-3-propanamide,
alpha-(dimethylamino)-N-[3-(1-methylethyl)-7-(1-methylpropyl)-5,8-dioxo-2-oxa-6,
9-diazabicyclo[10.2.2]hexadeca-10,12,14,15-tetraen-4-yl]-1H-, [3R-[3R*,4S*,(S*),7S*(R*)]]
CHEMICAL COMMON NAME: Discarine A
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 0 to 700 uM
APPLICATION METHODS: Isolated chloroplast exposed in solution
EXPERIMENTAL CONDITIONS: Chloroplasts isolated in 250 mM sucrose, 20 mM n-tris (hydroxymetyl)-methyl-2-amino ethanesulphonic acid)-NaOH buffer (pH 7.8) and 3 mM MgCl(2); effects on photophosphorylation studied
EFFECTS: Energy transfer inhibitor at low concentrations (50% inhibition at 230 uM); electron transport inhibitor at concentrations higher than 250 uM
COMMENTS: Discarine A--mixed-type inhibitor, both energy transfer and electron transport inhibition, peptide alkaloid obtained from Argentine plant DISCARIA LONGISPINA
REFERENCE: Andreo, C.S. and R.H. Vallejos, "Inhibition of Energy Transfer Reactions in Spinach Chloroplasts by Discarine B, a New Peptide Alkaloid," FEBS Lett. 33:201-204 (1973).

<2660>
CHEMICAL NAME: Indole, 3-ethyl-1H
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Ardisia (ARDISIA sp.); Willow (SALIX sp.); Oat (AVENA SATIVA); Cress (LEPIDIUM SATIVUM); Mustard, white (BRASSICA ALBA)
EXPERIMENTAL DOSE: 1:10,000
APPLICATION METHODS: Willow shoots placed in solutions; pre-germinated seed (36 hr) of oats, cress, and mustard placed in solutions
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Slightly enhanced rooting of willow; inhibited growth of oats, cress, and mustard
COMMENTS: Heteroauxin and homologue beta-indolylpropionic acid caused epinastic curvatures of tomato, but not other indole derivatives or ascorbic acid; all compounds found effective in stimulating root development in willow branches, ascorbic being also effective for shoots; vitamin C produced maximum effect, closely followed by heteroauxin and more remotely by the other indole derivatives; only low concentrations stimulating, high concentrations lethal or at least retarding
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2661>
CHEMICAL NAME: Inositol
CHEMICAL COMMON NAME: Inositol
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2662>
CHEMICAL NAME: Insulin, hydrochloride
CHEMICAL COMMON NAME: Insulinhydrochloride
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:3000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2663>
CHEMICAL NAME: Iron, ion (Fe 3+)
CHEMICAL COMMON NAME: Ferric ion
PLANT: Duckweed (LEMNA VALDIVIANA)
EXPERIMENTAL DOSE: 0.001 to 1.000 ppm
APPLICATION METHODS: Addition to culture solution in which plants were growing
EXPERIMENTAL CONDITIONS: Field study; metal concentrations determined from specimens collected
EFFECTS: No toxic effect but bioaccumulation in natural waters
COMMENTS: Significant concentration effect for metals analysed comparing water concentrations with plant levels; high levels of manganese and iron occurred in plants; only for these two metals was a significant correlation found between water and plant concentrations when compared on an individual lake basis; lead and cadmium also showed a quite good fit
REFERENCE: Hutchinson, T.C. and H. Czyrska, "Heavy Metal Toxicity and Synergism to Floating Aquatic Weeds," Verh. Internat. Verein. Limnol. 19:2102-2111 (1975).

<2664>
<2664>
CHEMICAL NAME: Iron, tris(dimethylcarbamodithioato-S,S')-,(OC-6-11)-
CHEMICAL COMMON NAME: Fermate
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Reduced seed germination, seedling damage, and chromosome abberrations
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<2665>
CHEMICAL NAME: Isoindole-1,3(2H)-dione, 2-(2,6-dioxo-3-piperindyl)-1H-
CHEMICAL COMMON NAME: Thalidomide, hydrolysis products
PLANT: Barley (HORDEUM VULGARE); Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 2.0 mg/ml
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; barley and broad bean lateral root meristem
EFFECTS: Chromosome aberrations
COMMENTS: Thalidomide alone caused no abnormalities, but its hydrolytic products did; treatment found highly effective pattern of chromosome breakages resembled that obtained by fluorodeoxyuridine and aminopterin, i.e. extensive shattering of chromosomes, chromosomes with gaps, and chromosomes breaks without rejoining
REFERENCE: Natarajan, A.T. and R. Wilsson, "Studies on the Cytological Effects of Thalidomide and Its Hydrolytic Products," Kurze Originalmitteilungen 53(21):275-276 (1966).

<2666>
CHEMICAL NAME: Isoindole-1,3(2H)-dione, 3a,4,7,7a-tetrahydro-2-[(trichloro-methyl)thio]-1H-
CHEMICAL COMMON NAME: Orthocide
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/100 gal
APPLICATION METHODS: Postemergence (postflowering) spray; 50-55 psi to run-off; sprayed 2X
EXPERIMENTAL CONDITIONS: Field (29.5 C) and laboratory (19 C); intact flowers in field and cut flowers in laboratory; spray applied directly to flowers
EFFECTS: No adverse effect on flowers
COMMENTS: Some compounds not phytotoxic after two applications under any conditions (daconil, dithane M-15, dithane Z-78, morsodren, orthocide, phosdrin and thuricide); among phytotoxic chemicals and combinations, there was a greater tendency for injury occurring at 1) high temperature than at the low, 2) fast drying rate than the slow, 3) high temperature at fast rather than slow drying rate, and 4) high temperature at fast drying rate than low temperature at the slow rate
REFERENCE: Engelhard, A.W., "Chemical Sprays: Concentration, Drying Rate and Temperature Effects on Chrysanthemum Flower Quality", Florida State Hort. Soc. 85:370-374 (1973).

<2667>
CHEMICAL NAME: Isoindole-1,3(2H)-dione, 3a,4,7,7a-tetrahydro-2-[(trichloro-methyl)thio]-1H-
CHEMICAL COMMON NAME: Captan
PLANT: Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 1.25 mg/500 ml water
APPLICATION METHODS: Applied to seed inoculated with RHIZOBIUM
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; evaluated at flowering stage
EFFECTS: Reduced nodulation and growth
COMMENTS: Seed disinfection had beneficial effect on stand of crop; fungicidal treatment had some adverse effect on nodulation and dry weight of plants; combinations always superior over control i.e. where neither inoculant nor fungicide applied
REFERENCE: Mukewar, P.M. and V.P. Bhide, "Effect of Seed Treatment With Fungicides and Antibiotic Aureofungin on Nodulation by RHIZOBIUM in Groundnut," Hindustan Antibiotics Bull. 12(2):75-80 (1970).

<2668>
CHEMICAL NAME: Isoindole-1,3(2H)-dione, 3a,4,7,7a-tetrahydro-2-[(trichloro-methyl)thio]-1H-
CHEMICAL COMMON NAME: Captan
PLANT: Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 0.25 to 8.00%
APPLICATION METHODS: Drops applied individually to leaves; foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse, laboratory, and field studies; varied means of application under wide range of conditions
EFFECTS: Damage to bean leaves at 0.5% and greater concentrations; damage directly affected by formulation ingredients
COMMENTS: Greenhouse tests showed injury increased as concentrations of captan and wetting agent in preparation increased; addition of kaolinite as filler also increased phytotoxicity of mixture; calcium carbonate and magnesium oxide had "safening" effect; captan toxicity to bean foliage increased with increasing temperatures and with decreasing light intensity
REFERENCE: Daines, R.H., R.J. Lukens, E. Brennan, and I.A. Leone, "Phytotoxicity of Captan as Influenced by Formulation, Environment, and Plant Factors," Phytopath. 47:567-572 (1957).

<2669>
CHEMICAL NAME: Isoindole-1,3(2H)-dione, 3a,4,7,7a-tetrahydro-2-[(trichloro-methyl)thio]-1H-
CHEMICAL COMMON NAME: Orthocide 60
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Little or no adverse effect on germination or seedlings but some chromosome fragmentation
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<2670>
CHEMICAL NAME: Isoindole-1,3(2H)-dione, 3a,4,7,7a-tetrahydro-2-[(trichloro-methyl)thio]-1H-
CHEMICAL COMMON NAME: Orthocide 75
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<2671>
CHEMICAL NAME: Isoindole-1,3(2H)-dione, 3a,4,7,7a-tetrahydro-2-[(trichloromethyl)thio]-1H-
CHEMICAL COMMON NAME: Captan
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 300 ppm
APPLICATION METHODS: 50% dust; preplanting soil treatments, 50 ml solution to each of 20 pots
EXPERIMENTAL CONDITIONS: Greenhouse tests at 80 to 85 F; soil inoculated with PHYTOPHTHORA PARASITICA var. NICOTIANAE (causes black shank); 5 randomized replicates of 4 pots each for each chemical rate; chemical added once during test; plantings made 4 days and 3 weeks after treatment; chloropicrin treated soils as controls
EFFECTS: Plants taller but had smaller leaves than healthy controls
COMMENTS: Chloropicrin-proven fungicide for black shank disease
REFERENCE: Morgan, O.D., "The Use of Chemical Soil Drenches to Control PHYTOPHTHORA PARASITICA Var. NICOTIANAE and Their Phytotoxic Effects on Tobacco and Toxicity to Other Soil Flora," Plant Dis. Rep. 47(7):755-761 (1959).

<2672>
CHEMICAL NAME: Isoxazolo[3,4-d]pyrimidin-4(1H)-one, 6-(1,1-dimethylethyl)-3-(1-methylethyl)-
CHEMICAL COMMON NAME: NIA-23486
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 lb/A; WP
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: In preemergence application, effective control of weeds and slight damage to corn
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<2673>
CHEMICAL NAME: Isoxazolo[3,4-d]pyrimidin-4(1H)-one, 6-(1,1-dimethylethyl)-3-(1-methylethyl)-
CHEMICAL COMMON NAME: NIA-23486
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence application; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (5-10-10) and diazinon (4.0 lb/A) applied before disking
EFFECTS: Effective control of weeds but injury to corn
COMMENTS: Combination preemergence or postemergence treatments about as effective as herbicides alone
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<2674>
<2674>
CHEMICAL NAME: Isoxazolo[5,4-d]pyrimidin-4(5H)-one, 6-(1,1-dimethylethyl)-3-(1-methylethyl)-
CHEMICAL COMMON NAME: NIA-21844
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 lb/A; EC
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: Effective control of weeds with no adverse effects on corn
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<2675>
CHEMICAL NAME: Isoxazolo[5,4-d]pyrimidin-4(5H)-one, 6-(1,1-dimethylethyl)-3-(1-methylethyl)-
CHEMICAL COMMON NAME: NIA-21844
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: Preemergence application; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (5-10-10) and diazinon (4.0 lb/A) applied before disking
EFFECTS: Effective weed control at both application rates with no corn injury
COMMENTS: Combination preemergence or postemergence treatments about as effective as herbicides alone
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<2676>
CHEMICAL NAME: K-1131-Na
CHEMICAL COMMON NAME: K-1131-Na
PLANT: Plants; Bean, lima (PHASEOLUS LIMENSIS); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 5.0 and 10.0 lb/A
APPLICATION METHODS: Preemergence spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate weed control at 10.0 lb/A with no adverse effect on bean but severely reduced stand of direct-seeded and transplanted cauliflower
COMMENTS: Premerge, Dow General and K-1131-Na, and all dinitros, gave excellent control of weeds with no bean crop injury for two months
REFERENCE: Jacob, W.C., "Pre-Emergence Weed Control in Lima Beans and Cauliflower," Proc. N.E. Weed Cont. conf. 5:1-5 (1951).

<2677>
CHEMICAL NAME: K-1131-NH(4)
CHEMICAL COMMON NAME: K-1131-NH(4)
PLANT: Plants; Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 5.0 and 10.0 lb/A
APPLICATION METHODS: Preemergence spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At 10.0 lb/A, moderate weed control with no adverse effect on lima beans
COMMENTS: Premerge, Dow General and K-1131-Na, and all dinitros, gave excellent control of weeds with no bean crop injury for two months
REFERENCE: Jacob, W.C., "Pre-Emergence Weed Control in Lima Beans and Cauliflower," Proc. N.E. Weed Cont. conf. 5:1-5 (1951).

<2678>
CHEMICAL NAME: Lead
CHEMICAL COMMON NAME: Lead
PLANT: Duckweed (LEMNA VALDIVIANA)
EXPERIMENTAL DOSE: 0.001 to 1.000 ppm
APPLICATION METHODS: Addition to culture solution in which plants were growing
EXPERIMENTAL CONDITIONS: Field study; metal concentrations determined from specimens collected
EFFECTS: No toxic effect but bioaccumulation in natural waters
COMMENTS: Significant concentration effect for metals analysed comparing water concentrations with plant levels; high levels of manganese and iron occurred in plants; only for these two metals was a significant correlation found between water and plant concentrations when compared on an individual basis; lead and cadmium also showed a quite good fit
REFERENCE: Hutchinson, T.C. and H. Czyrska, "Heavy Metal Toxicity and Synergism to Floating Aquatic Weeds," Verh. Internat. Verein. Limnol. 19:2102-2111 (1975).

<2679>
CHEMICAL NAME: Lead chloride
CHEMICAL COMMON NAME: Lead chloride
PLANT: Maple, red (ACER RUBRUM); Pine, loblolly (PINUS TAEDA)
EXPERIMENTAL DOSE: 5X10(-3) to 2X10(-4)M
APPLICATION METHODS: Soil addition
EXPERIMENTAL CONDITIONS: Environmental chamber (phytotron); soils--Georgeville silt loam and Whitestore sandy loam; temperatures--11 C to 29 C; photoperiod--16 hr

<2679> CONT.
EFFECTS: Reduced growth of and leaf injury to both species at 1X10(-3)M
COMMENTS: Sodium fluoride or lead chloride reduced growth of loblolly pine and red maple seedlings in pots of two forest soils; lead chloride treatments also increased anthocyanin content of red maple leaves
REFERENCE: Davis, J.B. and R.L. Barnes, "Effects of Soil-Applied Fluoride and Lead on Growth of Loblolly Pine and Red Maple," Environ. Pollut. 5(1):35-44 (1973).

<2680>
CHEMICAL NAME: Lead chloride
CHEMICAL COMMON NAME: Lead chloride
PLANT: Maple, red (ACER RUBRUM); Pine, loblolly (PINUS TAEDA)
EXPERIMENTAL DOSE: 2X10(-4)M--2X10(-2)M
APPLICATION METHODS: Soil drench application; 2 X weekly
EXPERIMENTAL CONDITIONS: Soils--Georgeville silt loam and Whitestore sandy loam; environmental chamber (phytotron) exposure; 16 hr photoperiod with supplemental light as needed; also greenhouse study; two sets of day/night temperatures; pot culture
EFFECTS: Fluoride--leaf necrosis of pine and leaf blotching in maple; lead--pine needle growth reduction (finally necrosis at higher concentrations) and leaf casting and increased red pigmentation in maple leaves; growth reductions of both types of seedlings
COMMENTS: Seedlings grew better on Whitestore sandy loam than on Georgeville silt loam; there was little difference between soil types in influencing responses to fluoride or lead
REFERENCE: Davis, J.B. and R.L. Barnes, "Effects of Soil-Applied Fluoride and Lead on Growth of Loblolly Pine and Red Maple," Environ. Pollut. 5(1):35-44 (1973).

<2681>
CHEMICAL NAME: Lime-sulfur
CHEMICAL COMMON NAME: Lime-sulfur
PLANT: Plum (PRUNUS DOMESTICA); Currant, black
EXPERIMENTAL DOSE: 2.0%
APPLICATION METHODS: Foliar spray; 100 and 200 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; time period--1953 to 1955
EFFECTS: No damage of plum but leaf scorch observed on black currant
COMMENTS: Some marginal scorch developed on black currant leaves sprayed with lime-sulphur but no leaf damage was seen on any bushes; no influence on blossom or fruit-set detected
REFERENCE: Kirby, A.H.M. and M. Bennett, "Phytotoxicity Trials with Acaricides on Black Currant and Plum," Rep. E. Malling Res. Sta. 152-154(1958).

<2682>
CHEMICAL NAME: M&B-20035
CHEMICAL COMMON NAME: M&B-20035
PLANT: Broadleaf weeds; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
APPLICATION METHODS: Preplant and preemergence sprays; 80 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Effective control of broadleafs and quackgrass at all rates but slight to moderate control of barnyard grass with no adverse effect on potato yield
COMMENTS: Most herbicides somewhat ineffective for annual grass control; S-6044, M&B20035, and oxadiazolin all ineffective for control of annual grasses; combinations of oryzalin with metribuzin, methazole, and linuron also provided good broadleaved weed and quackgrass control; oryzalin alone not effective for annual grass or quackgrass control
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in White Potatoes in Maine - 1973," Proc. Northeast. Weed Sci. Soc. 28:287-295 (1974).

<2683>
CHEMICAL NAME: Makrolin
CHEMICAL COMMON NAME: Makrolin
PLANT: Wheat (TRITICUM AESTIVUM); Sugarcane (SACCHARUM OFFICINARUM); Tomato (LYCOPERSICON ESCULENTUM); Corn (ZEA MAYS); Sesame (SESAMUM INDICUM)
EXPERIMENTAL DOSE: 3.0%
APPLICATION METHODS: Two postemergence spray treatments--at one month old and when fully mature
EXPERIMENTAL CONDITIONS: Greenhouse and plot grown plants; plots 10x10 sq ft; visual observations
EFFECTS: Tip burn of leaves, plants recovered in 2 to 3 weeks
REFERENCE: Ashrafi, S.H., I.A. Khan, and M. Tasnif, "Toxicity of Petkolin-M to Plants," Sci. Res. 5(4):163-170 (1968).

<2684>
CHEMICAL NAME: Malonic acid, omega-skatolyl-
CHEMICAL COMMON NAME: Omega-skatolylmalonic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2685>
<2685>
CHEMICAL NAME: Manganese
CHEMICAL COMMON NAME: Manganese
PLANT: Duckweed (LEMNA VALDIVIANA)
EXPERIMENTAL DOSE: 0.001 to 1.000 ppm
APPLICATION METHODS: Addition to culture solution in which plants were growing
EXPERIMENTAL CONDITIONS: Field study; metal concentrations determined from specimens collected
EFFECTS: No toxic effect but bioaccumulation in natural waters
COMMENTS: Significant concentration effect for metals analysed comparing water concentrations with plant levels; high levels of manganese and iron occurred in plants; only for these two metals was a significant correlation found between water and plant concentrations when compared on an individual basis; lead and cadmium also showed a quite good fit
REFERENCE: Hutchinson, T.C. and H. Czyrska, "Heavy Metal Toxicity and Synergism to Floating Aquatic Weeds," Verh. Internat. Verein. Limnol. 19:2102-2111 (1975).

<2686>
CHEMICAL NAME: Manganese, [[1,2-ethanediylbis[carbamodithioato]] (2-)]-, mixt. with [[1,2-ethanediylbis[carbamodithioato]](2-)]zinc
CHEMICAL COMMON NAME: Mancozeb
PLANT: Mustard, Chinese (BRASSICA JUNCEA); Mustard (BRASSICA CAMPESTRIS)
EXPERIMENTAL DOSE: 2 lb/100 gpa water
APPLICATION METHODS: Postemergence treatment sprayed to runoff
EXPERIMENTAL CONDITIONS: September treatments; phytotoxic observations made after every 24 hours of each treatment and continued up to 120 hours
EFFECTS: No apparent injury
REFERENCE: Khan, S.A., R.M. Shafique, and Khan, B.A., "Phytotoxicity Caused by Pesticides in Brassica," J. Agric. Res. (Punjab) 11(1):55-68(1973).

<2687>
CHEMICAL NAME: Manganese, [[1,2-ethanediylbis[carbamodithioato]](2-)]-
CHEMICAL COMMON NAME: Dithane M-22
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Little or no adverse effect on germination or seedlings but some chromosome fragmentation
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<2688>
CHEMICAL NAME: Manganese, [[1,2-ethanediylbis[carbamodithioto]] (2-)]-
CHEMICAL COMMON NAME: Dithane M-45
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
APPLICATION METHODS: Postemergence (postflowering) spray; 50-55 psi to run-off; sprayed 2X
EXPERIMENTAL CONDITIONS: Field (29.5 C) and laboratory (19 C); intact flowers in field and cut flowers in laboratory; spray applied directly to flowers
EFFECTS: No adverse effect on flowers
COMMENTS: Some compounds not phytotoxic after two applications under any conditions (daconil, dithane M-15, dithane Z-78, morsodren, orthocide, phosdrin and thuricide); among phytotoxic chemicals and combinations, there was a greater tendency for injury occurring at 1) high temperature than at the low, 2) fast drying rate than the slow, 3) high temperature at fast rather than slow drying rate, and 4) high temperature at fast drying rate than low temperature at the slow rate
REFERENCE: Engelhard, A.W., "Chemical Sprays: Concentration, Drying Rate and Temperature Effects on Chrysanthemum Flower Quality", Florida State Hort. Soc. 85:370-374 (1973).

<2689>
CHEMICAL NAME: Mannitol
CHEMICAL COMMON NAME: Mannitol
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2690>
CHEMICAL NAME: Mannose
CHEMICAL COMMON NAME: Mannose
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<2691>
CHEMICAL NAME: Mannose, 3-amino-3,6-dideoxy-, D-mixt. with 1-[4-(methylamino)phenyl]ethanone
CHEMICAL COMMON NAME: Aureofungin
PLANT: Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 5 mg/500 ml water
APPLICATION METHODS: Applied to seed inoculated with RHIZOBIUM
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; evaluated at flowering stage
EFFECTS: Reduced nodulation and growth
COMMENTS: Seed disinfection had beneficial effect on stand of crop; fungicidal treatment had some adverse effect on nodulation and dry weight of plants; combinations always superior over control i.e. where neither inoculant nor fungicide applied
REFERENCE: Mukewar, P.M. and V.P. Bhide, "Effect of Seed Treatment With Fungicides and Antibiotic Aureofungin on Nodulation by RHIZOBIUM in Groundnut," Hindustan Antibiotics Bull. 12(2):75-80 (1970).

<2692>
CHEMICAL NAME: MBR 12325
CHEMICAL COMMON NAME: MBR-12325
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 0.28 and 0.56 kg/ha
APPLICATION METHODS: Postemergence spray (liquids) and drop-spreader granular formed; second application made if deemed necessary; 4% EC formulation
EXPERIMENTAL CONDITIONS: Field study; evaluation time--4 mo with mowing at 5 to 8 day intervals
EFFECTS: Growth reduction with discoloration for 2 to 3 weeks, both temporary and resulting from a single application
COMMENTS: Proxazolon and MBR-12325 retarded growth more than the other materials; proxazolon slower acting than MBR-12325; PL-509 only material that did not significantly retard growth; 4 weeks after initial application, turf that had been significantly reduced in growth, grew faster than untreated; all materials caused an unacceptable discoloration lasting for 2 to 3 weeks; lower rates tended to cause less discoloration, but growth suppression did not last as long as higher rates
REFERENCE: Watschke, T.L., "Growth Regulation of Kentucky Bluegrass With Several Growth Retardants," Agron. J. 68(1):787-791 (1976).

<2693>
CHEMICAL NAME: ME-3000
CHEMICAL COMMON NAME: ME-3000
PLANT: Plants; Bean, lima (PHASEOLUS LIMENSIS); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 1.0 and 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight weed control with no adverse effect on lima bean and reduced stand of direct-seeded but not transplanted cauliflower at 3.0 lb/A
COMMENTS: Premerge, Dow General and K-1131-Na, and all dinitros, gave excellent control of weeds with no bean crop injury for two months
REFERENCE: Jacob, W.C., "Pre-Emergence Weed Control in Lima Beans and Cauliflower," Proc. N.E. Weed Cont. conf. 5:1-5 (1951).

<2694>
CHEMICAL NAME: MEFA
CHEMICAL COMMON NAME: MEFA
PLANT: Bladderwort (UTRICULARIA NIFLEXA)
EXPERIMENTAL DOSE: 2 ml/l.
APPLICATION METHODS: Addition to nutrient solution
EXPERIMENTAL CONDITIONS: Laboratory study; IN VITRO culture of shoot tips of U. INFLEXA in glass tubes or flasks containing White's nutrient medium; incubation temperature--28 C; photoperiod--18 hr; evaluation time--up to 10 wk
EFFECTS: Plant death
COMMENTS: MEFA showed strong herbicidal effect and killed plants; AMO-1618 and coumarin inhibited apical as well as lateral bud growth; These three compouds and ABA, kinetin, BA, and zeatin unable to promote flowering under non-inductive conditions; BA stimulated growth in both long and short days; even in the latter conditions AMO-1618 and coumarin totally inhibited flowering, whereas ABA, kinetin and BA permitted 80-100 per cent of the cultures to flower; zeatin lowered the percentage of flowering cultures
REFERENCE: Ram, H.Y.M., H. Harada, and J.P. Nitsch, "Studies on Growth and Flowering in Axenic Cultures of Insectivorous Plants. III. Effects of Photoperiod, Ethrel, Morphactin and a Few Other Growth Substances and Metabolic Inhibitors on UTRICULARIA INFLEXA," Z. Pflanzenphysiol. Bd. 68(5):235-253 (1972).

<2695>
<2695>
CHEMICAL NAME: Melfluidide
CHEMICAL COMMON NAME: Melfluidide
PLANT: Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 0.25, 0.50, 0.75, and 1.0 lb/A
APPLICATION METHODS: Postemergence; 4 lb/gal liquid concentrate formulation; foliar spray at volume of 50 gpa plus 1/2 pint wetting agent
EXPERIMENTAL CONDITIONS: Experimental sites located on highway rights-of-way; 1 sq ft sample areas; number of seedheads counted, height of 3 representative plants measured, and visual damage estimation made
EFFECTS: Number of seedheads and height reduced; 1.0 lb/A most efficient rate but caused greatest degree of foliar burn; 73.8% live foliage at 1.0 lb/A compared to untreated check
REFERENCE: Chappell, W.E., J.S. Coartney, and M.L. Link, "Plant Growth Regulators for Highway Maintenance," Proc. South. Weed Sci. Soc. 30:300-305 (1977).

<2696>
CHEMICAL NAME: Mercury chloride
CHEMICAL COMMON NAME: Agrosan
PLANT: Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 150 mg/100 g seed
APPLICATION METHODS: Applied to seed inoculated with RHIZOBIUM
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; evaluated at flowering stage
EFFECTS: Reduced nodulation and growth
COMMENTS: Seed disinfection had beneficial effect on stand of crop; fungicidal treatment had some adverse effect on nodulation and dry weight of plants; combinations always superior over control i.e. where neither inoculant nor fungicide applied
REFERENCE: Mukewar, P.M. and V.P. Bhide, "Effect of Seed Treatment With Fungicides and Antibiotic Aureofungin on Nodulation by RHIZOBIUM in Groundnut," Hindustan Antibiotics Bull. 12(2):75-80 (1970).

<2697>
CHEMICAL NAME: Mercury chloride
CHEMICAL COMMON NAME: Calomel
PLANT: Pine, Monterey (PINUS RADIATA)
EXPERIMENTAL DOSE: 20 lb/A
APPLICATION METHODS: Addition to soil in which pine seedlings were grown
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Morphological changes in roots and mycorrhizae
COMMENTS: Internal alterations of mycorrhizae under influence of eradicants characterized by irregularities in shape of fungal mantle, restricted penetration of mycelia, and reduced development of Hartig net; external modifications of short roots suggested that biocides cause radical changes in exudates of rhizospheric organisms
REFERENCE: Wilde, S.A. and D.J. Persidsky, "Effect of Biocides on the Development of Ectotrophic Mycorrhizae in Monterey Pine Seedlings," Proc. Soil Sci. Soc. 20:107-110 (1956).

<2698>
CHEMICAL NAME: Mercury chloride, mixt. with mercury chloride ($HgCl_2$)
CHEMICAL COMMON NAME: Calo-Chlor
PLANT: Crabgrass (DIGITARIA sp.); Bentgrass, creeping (AGROSTIS PALUSTRIS); Bentgrass, Rhode Island (AGROSTIS TENUIS)
EXPERIMENTAL DOSE: 1:664 (X : water); 10 gal/1000 sq ft; applied 10 day intervals
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight crabgrass control with no adverse effect on grasses of golf putting greens
COMMENTS: Puraturf and Puratized 806, gave good control of crabgrass; twenty-two different treatments used but most had no appreciable effect on crabgrass
REFERENCE: DeFrance, J.A., "Water-Soluble Mercurials for Crabgrass Control in Turf," Greenkeepers' Rept. 15(1):30-31 (1947).

<2699>
CHEMICAL NAME: Mercury, (acetato-O) phenyl-
CHEMICAL COMMON NAME: PMA
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 3.4 qt/A
APPLICATION METHODS: Foliar spray, 360 gal/A; 3 weekly applications
EXPERIMENTAL CONDITIONS: Field study; time period--1948 to 1950
EFFECTS: Effective crabgrass control with very slight damage to turfgrass
COMMENTS: S-1840, S-1980, and S-1998 gave crabgrass control equivalent to several phenyl mercury compounds and potassium cyanate; essentially no injury evident 36 days after treatment
REFERENCE: Engel, R.E. and R.J. Aldrich, "Three New Compounds for controlling Crabgrass in Turf," Proc. N.E. Weed cont. Conf. 5:151-160 (1951).

<2700>
CHEMICAL NAME: Mercury, (cyanguanidinato-N') methyl-
CHEMICAL COMMON NAME: Morsodren
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 3.0 and 6.0 oz/100 gal
APPLICATION METHODS: Postemergence (postflowering) spray; 50-55 psi to run-off; sprayed 2X
EXPERIMENTAL CONDITIONS: Field (29.5 C) and laboratory (19 C); intact flowers in field and cut flowers in laboratory; spray applied directly to flowers
EFFECTS: No adverse effect on flowers
COMMENTS: Some compounds not phytotoxic after two applications under any conditions (daconil, dithane M-15,

<2700> CONT.
dithane Z-78, morsodren, orthocide, phosdrin and thuricide); among phytotoxic chemicals and combinations, there was a greater tendency for injury occurring at 1) high temperature than at the low, 2) fast drying rate than the slow, 3) high temperature at fast rather than slow drying rate, and 4) high temperature at fast drying rate than low temperature at the slow rate
REFERENCE: Engelhard, A.W., "Chemical Sprays: Concentration, Drying Rate and Temperature Effects on Chrysanthemum Flower Quality", Florida State Hort. Soc. 85:370-374 (1973).

<2701>
CHEMICAL NAME: Mercury, (2-ethoxyethyl)hydroxy-
CHEMICAL COMMON NAME: Tillex
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: No adverse effect
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<2702>
CHEMICAL NAME: Mercury, chloroethyl-
CHEMICAL COMMON NAME: Ceresan
PLANT: Barley (HORDEUM VULGARE); Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.025%
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Reduced seed germination and seedling injury of barley and chromosome aberrations of barley and broad bean
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<2703>
CHEMICAL NAME: Mercury, chlorophenyl-
CHEMICAL COMMON NAME: Hexason
PLANT: Barley (HORDEUM VULGARE); Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.025%
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Reduced seed germination and seedling injury of barley and chromosome aberrations of barley and broad bean
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<2704>
CHEMICAL NAME: Mercury, chlorophenyl-
CHEMICAL COMMON NAME: PMC
PLANT: Pear (PYRUS COMMUNIS)
EXPERIMENTAL DOSE: 0.0025, 0.005, and 0.01%
APPLICATION METHODS: Pre-blossom and post-blossom treatments, maximum of 2 each; WP formulation containing 2.5% PMC; standard rate of 0.005% equals 2 lb WP per 100 gal wash
EXPERIMENTAL CONDITIONS: 5 single-tree replicates of 6 treatments; unsprayed control was 1 treatment; 3 year study, 1 treatment common to all years
EFFECTS: Chlorotic patches on leaves and wrinkling of leaves; significant crop reduction
COMMENTS: Time required for appearance of symptoms seems to vary with season, PMC concentration, and timing of sprays; PMC usually applied as fungicide
REFERENCE: Kirby, A.H.M. and M. Bennett, "Further Phytotoxicity Studies with Phenylmercuric Chloride on Conference Pear," Rep. E. Malling Res. Sta. 148-151 (1957).

<2705>
<2705>
CHEMICAL NAME: Mercury, (acetato-O) phenyl-
CHEMICAL COMMON NAME: PMAS
PLANT: Crabgrass (DIGITARIA sp.); Bentgrass, creeping (AGROSTIS PALUSTRIS); Bentgrass, Rhode Island (AGROSTIS TENUIS)
EXPERIMENTAL DOSE: 1:18,000; 10 gal/1000 sq ft; applied 10 day intervals
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective crabgrass control with no adverse effect on grasses of golf putting green
COMMENTS: Puraturf and Puratized 806, gave good control of crabgrass; twenty-two different treatments used but most had no appreciable effect on crabgrass
REFERENCE: DeFrance, J.A., "Water-Soluble Mercurials for Crabgrass Control in Turf," Greenkeepers' Rept. 15(1):30-31 (1947).

<2706>
CHEMICAL NAME: Mercury, (acetato-O) phenyl-
CHEMICAL COMMON NAME: PMAS
PLANT: Crabgrass (DIGITARIA sp.);Broadleaf weeds; Gladiolus
EXPERIMENTAL DOSE: 1.5 to 4.0 lb/A
APPLICATION METHODS: Basal postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--sandy clay loam
EFFECTS: Effective weed control at all rates with no adverse effect on gladiolus
COMMENTS: Potassium cyanate and PMAS applied as postemergence soil treatments, gave promising control of crabgrass and certain broad-leaved weeds without injury to gladiolus
REFERENCE: Gianfagna, A.J., "Gladiolus Weed Control," N.Y. State Flower Growers Bull. 43:2-3 (1949).

<2707>
CHEMICAL NAME: Mercury, (acetato-O) phenyl-, monoethanol ammonium salt
CHEMICAL COMMON NAME: Seltox
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 15.3 qt/A
APPLICATION METHODS: Foliar spray, 360 gal/A; 3 weekly applications
EXPERIMENTAL CONDITIONS: Field study; time period--1948 to 1950
EFFECTS: Effective crabgrass control with no adverse effect on turfgrasses
COMMENTS: S-1840, S-1980, and S-1998 gave crabgrass control equivalent to several phenyl mercury compounds and potassium cyanate; essentially no injury evident 36 days after treatment
REFERENCE: Engel, R.E. and R.J. Aldrich, "Three New Compounds for controlling Crabgrass in Turf," Proc. N.E. Weed cont. Conf. 5:151-160 (1951).

<2708>
CHEMICAL NAME: Metaldhyde
CHEMICAL COMMON NAME: Metaldehyde
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 2.80 kg/ha
APPLICATION METHODS: Bait application applied monthly
EXPERIMENTAL CONDITIONS: 2.7x6.4 m plots, randomized block design with 4 replications; Frilsham Series soil (brown earth in loamy drift over chalky head); 5-year experiment, 1969-1973; yield measurements from center of each plot; 377 kg/ha N per year as fertilizer; irrigation when soil moisture deficit reached 25 mm
EFFECTS: No injury--yields same or greater than control
COMMENTS: Metaldehyde--molluscicide
REFERENCE: Henderson, I.F. and R.O. Clements, "The Effect of Pesticides on the Yield and Botanical Composition of a Newly-Sown Ryegrass Ley and of an Old Mixed Pasture," J. Br. Grassl. Soc. 29:185-190 (1974).

<2709>
CHEMICAL NAME: Methacrylamide, N-(3,4-dichlorophenyl)-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<2710>
CHEMICAL NAME: Methane, bromo-
CHEMICAL COMMON NAME: Methyl bromide
PLANT: Lettuce (LACTUCA SATIVA); Cabbage (BRASSICA OLERACEA); Radish (RAPHANUS SATIVUS); Carnation (DIANTHUS sp.); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.5 to 2.0 lb/100 sq ft; 5 to 50 ppm
APPLICATION METHODS: Addition to soil as fumigant
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Bioaccumulation in crop plants and moderate injury to carnations
COMMENTS: In crop plants, bromide accumulated at levels 20 to 30X normal; accumulation persisted for up to 2 yr; carnations moderately injured at 0.5 lb/sq ft
REFERENCE: Maw, G.A., "4. Crop Protection," Glasshouse Crops Res. Inst. Rept. 1970:84-98 (1971).

<2711>
CHEMICAL NAME: Methane, bromo-
CHEMICAL COMMON NAME: Methyl bromide
PLANT: Corn (ZEA MAYS); Wheat (TRITICUM AESTIVUM); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 20, 30, and 40 g/cu m
APPLICATION METHODS: Fumigation for insect control
EXPERIMENTAL CONDITIONS: Laboratory study; seed at different moisture levels
EFFECTS: At 30 and 40 g/cu m, reduced germination of all test species and reduced germination of wheat at 20 g/cu m
COMMENTS: Methyl bromide, carbon bisulphide, and phostoxin affected germination of corn and cotton; wheat less affected when using carbon bisulphide or phostoxin, but significantly impaired when using methyl bromide
REFERENCE: Kamel, A. H., E. Z. Fam, M. T. Mahdi, and E. M. Sheltawi, "The Phytotoxic Effect of Carbon Bisulphide, Methyl Bromide and Hydrogen Phosphide on the Germination of Seeds of Certain Field Crops," Bull. Ent. Soc. Egypt. Econ. Serv. 8:75-80 (1974).

<2712>
CHEMICAL NAME: Methane, bromo-
CHEMICAL COMMON NAME: Methyl bromide
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 44, 88, and 132 mg hr/l.
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--4 and 18 C; RH - 75%; cuttings dipped in a hormone rooting powder after fumigation; photoperiod--18 hr with supplementary light; evaluation time--6 or 14 days
EFFECTS: Leaf necrosis leading to plant death caused by methyl bromide was lessened by storing cuttings at 4 C before fumigation at 18 C
COMMENTS: Methyl bromide fumigation to control insect pests sometimes resulted in phytotoxic effects; phytotoxicity of methyl bromide varied considerably with different chrysanthemum cultivars
REFERENCE: Gostic, K.G. and D.F. Powell, "Phytotoxicity of Methyl Bromide to Chrysanthemum Cuttings," Plant Pathol. 20(3):136-142 (1971).

<2713>
CHEMICAL NAME: Methane, bromo-
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 435 lb/A
APPLICATION METHODS: Postemergence, 1 treatment
EXPERIMENTAL CONDITIONS: Screening trials--50 sq ft plots, 2 replications in a randomized block design; field test--only promising herbicides tested
EFFECTS: Initial control--100%; regrowth after 3 months--none; seedling growth after 3 months--none
REFERENCE: Youngner, V.B. and J.R. Goodin, "Control of PENNISETUM CLANDESTINUM, Kikuyugrass," Weeds 9(2):238-242 (1961).

<2714>
CHEMICAL NAME: Methane, bromo-
PLANT: Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 1.5, 2.0, 2.5, 3.0, 4.0, 5.0 and 6.0 lb/1000 cubic ft
APPLICATION METHODS: Seeds fumigated in 100-cubic-ft gas-tight chambers for 2, 8, and 24 hr
EXPERIMENTAL CONDITIONS: Seeds dried to desired moisture content; seeds fumigated with 50% receiving a second fumigation 21 days later; germination tests within 5 days after fumigation and also after 84 days in storage
EFFECTS: Germination reduced
COMMENTS: Variables such as moisture content, period of exposure, temperature, etc. examined for effect on germination reduction
REFERENCE: Strong, R.G. and D.L. Lindgren, "Effect of Methyl Bromide and Hydrocyanic Acid Fumigation on the Germination of Rice," J. Econ. Entomol. 52(4):706-710 (1959).

<2715>
CHEMICAL NAME: Methane, bromo-
CHEMICAL COMMON NAME: Terabol
PLANT: Pine, Austrian (PINUS NIGRA)
EXPERIMENTAL DOSE: 50 g/sq m
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Field study; soil--clayey loam; pH-6.1; evaluation period--up to 18 mos
EFFECTS: Chlorosis at 3 mos and reduced growth and root development at 9 mos
COMMENTS: Occurrence of phytotoxicity on softwood seedlings consequence of destruction of useful microflora;

<2715>
<2715> CONT.
phytotoxic phenomena eliminated from softwood seedlings by treating seed prior to sowing with appropriate mycorhizal fungus, or by inoculating with fungi after sowing by watering
REFERENCE: Popovic, J., N. Veselinovic, and M. Peno, "Investigation of the Causes of Phytotoxic Phenomena on Some Softwood Species After Soil Treatment With Terabol and the Possibilities for Their Elimination," Pesticides 3:323-329 (1974).

<2716>
CHEMICAL NAME: Methane, bromo-
CHEMICAL COMMON NAME: Methyl bromide
PLANT: Plants; Tobacco (NICOTIANA sp.)
EXPERIMENTAL DOSE: 1.0 lb/100 sq ft
APPLICATION METHODS: Fumigation; gas released under polyethylene cover
EXPERIMENTAL CONDITIONS: Field study; time period--1955 and 1956
EFFECTS: Effective weed control with no adverse effect on tobacco
COMMENTS: Vapam, Mylone, and N521 used alone and in combination with calcium cyanamid gave effective weed and nematode control in tobacco plant beds; no stunting or other adverse effect on tobacco plants at two experimental plant bed locations; at one of three locations in cooperative trials, tobacco plants retarded following treatment with Vapam and N521; no apparent relation to physical conditions of the soil or to cropping history where stunting occurred; weed control good at two of three grower locations
REFERENCE: Graham, T.W., "Weed and Root Knot Control in Tobacco Plant Beds by Surface Drench and Other Treatments," Plant Disease Rept. 40(12):1041-1044 (1956).

<2717>
CHEMICAL NAME: Methane, bromo-
CHEMICAL COMMON NAME: Methyl bromide
PLANT: Iris (IRIS sp.)
EXPERIMENTAL DOSE: 250, 500, and 1000 kg/ha
APPLICATION METHODS: Fumigation; 48 hr exposure; preplanting (3 wk)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--4 to 4.5 mo
EFFECTS: Leaves yellowed and dried, scales darkened, and roots shrivelled; damage about equivelent to disease being treated
COMMENTS: Bromide toxicity, correlated with MB dose applied, appeared 4% months after planting; leaves yellowed and senesced prematurely; MB treatments also reduced bulb size
REFERENCE: Haas, H.V., "Methyl Bromide and PCNB for Sclerotium Crown Rot Control in Iris," Phytoparasitica 4(3):201-205 (1976).

<2718>
CHEMICAL NAME: Methane, dichloro-
CHEMICAL COMMON NAME: Dichloromethane
PLANT: Lettuce (LACTUCA SATIVA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 100%
APPLICATION METHODS: Seed soak
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; seeds soaked for 24 or 44 hr then placed on filter paper contained in petri plates; solvents removed by vacuum drying
EFFECTS: No adverse effect on germination of lettuce or pea seed after 44-hr soak
COMMENTS: Anhydrous dichloromethane had no effect on germination or on uptake of oxygen when lettuce seeds treated for up to 24 hours; in contrast, anhydrous acetone distinctly depressed uptake of oxygen; when coumarin applied together with dichloromethane, germination and uptake of oxygen inhibited
REFERENCE: Meyer, H. and A. M. Mayer, "Permeation of Dry Seeds With Chemicals: Use of Dichloromethane," Science 171:583-584 (1971).

<2719>
CHEMICAL NAME: Methane, dichloro-
CHEMICAL COMMON NAME: Diazinon
PLANT: Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 25, 50, 75 and 100 ppm; xylene emulsion (100 ppm)
APPLICATION METHODS: Solution addition to filter paper in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--75 F; evaluation time--48 hr; germinated seed selected and exposed
EFFECTS: Reduced root growth at 25 ppm and higher concentrations; field study essentially corroborated results
COMMENTS: Phytotoxic effect of insecticide fertilizer mixtures attributed to fertilizer which interferred with uptake of water required by seed for germination, or to insecticide or solvent which may cause seedling damage; phorate and diazinon were more phytotoxic than Trithion or heptachlor in field and laboratory tests; insecticide solvent Velsicol AR-60 was more phytotoxic than xylene--depressed seedling emergence significantly in the field
REFERENCE: Allen, W.R., W.L. Askew, and K. Schreiber, "Effect of Insecticide Fertilizer Mixtures and Seed Treatments on Emergence of Sugar Beet Seedlings," J. Econ. Ent. 54(1):181-187 (1961).

<2720>
CHEMICAL NAME: Methane, isothiocyanato-
CHEMICAL COMMON NAME: Methyl isothiocyanate
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.0 pt/50 sq ft; 32.7% ai
APPLICATION METHODS: "Fumigation" by enclosing potted tomatoes (growing in treated soil) in polyethylene bags
EXPERIMENTAL CONDITIONS: Greenhouse study; summary of studies in 18 commercial greenhouses; exposure time--7 da; evaluation time--up to 8 wk
EFFECTS: Moderate damage to tomato; 10 wk required for safe planting after treatment

<2720> CONT.
COMMENTS: Soil samples taken 25 weeks after application generally caused severe curling and leaf drop and sometimes death; samples taken from properly ventilated soil 8 weeks after application caused only slight curling of few leaves
REFERENCE: Hunnam, D. and P. Waddingston, "Factors Affecting the Phytotoxicity of Metham Sodium to Tomatoes," Plant Pathol. 10(3):118-121 (1961).

<2721>
CHEMICAL NAME: Methane, sulfinylbis-
CHEMICAL COMMON NAME: Dimethyl sulfoxide
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100%
APPLICATION METHODS: Seed soak
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; seeds soaked for 24 or 44 hr then placed on filter paper contained in petri plates; solvents removed by vacuum drying
EFFECTS: After 24-hr soak, total suppression of germination
COMMENTS: Anhydrous dichloromethane had no effect on germination or on uptake of oxygen when lettuce seeds treated for up to 24 hours; in contrast, anhydrous acetone distinctly depressed uptake of oxygen; when coumarin applied together with dichloromethane, germination and uptake of oxygen inhibited
REFERENCE: Meyer, H. and A. M. Mayer, "Permeation of Dry Seeds With Chemicals: Use of Dichloromethane," Science 171:583-584 (1971).

<2722>
CHEMICAL NAME: Methane, sulfinylbis-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 0.05, 0.1, 0.5, and 1.0M
APPLICATION METHODS: Injection of 300ml fluid of test solution
EXPERIMENTAL CONDITIONS: Two 3-year old peach trees; injection holes drilled 30cm above soil line; trees injected while dormant, at bud swell stage, and at full leaf stage
EFFECTS: Injections while dormant caused no severe injury--foliation delayed on few trees but growth normal; 1.0M injections before bud swell and at full leaf caused severe leaf scorch and dieback of one or more branches; other concentrations injected at bud swell and at full leaf caused leaf burn and twig dieback improportion to concentration--trees appeared normal by mid-growing season
COMMENTS: Effect on peach mosiac virus (strain PM-4) and necrotic ringspot virus also investigated
REFERENCE: Pine, T.S., "Reactions of Peach Trees and Peach Tree Viruses to Treatment with Dimethyl Sulfoxide and Other Chemicals," Phytopathology 57: 671-673 (1967).

<2723>
CHEMICAL NAME: Methane, sulfinylbis-
CHEMICAL COMMON NAME: DMSO
PLANT: Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1 and 10%
APPLICATION METHODS: Submersion of leaf, root, and stem tissues
EXPERIMENTAL CONDITIONS: Laboratory study; radiotracer Zn(55), RNA, and methionine
EFFECTS: Increased uptake of Zn at 1% concentration but not of uracil or methionine; inhibited uptake of latter compounds at 10%
COMMENTS: DMSO stimulated zinc uptake in excised roots, stem-callus tissue, leaf disks, and enzymically isolated leaf cells, but did not significantly alter uptake and incorporation of C(14)-uracil into RNA and C(14)-methionine into protein although a slight inhibition was discernible in some tissues; at a higher concentration DMSO increased Zn(65) uptake in excised roots incubated for 2 hr; at the same concentration, C(14)-uracil and C(14)-methionine uptake and incorporation considerably inhibited in all the tissues; oxygen uptake as measured with Warburg manometers impaired; inhibition showed time and concentration dependency
REFERENCE: Bajaj, Y.P.S., V.S. Rathore, S.H. Wittwer, and M.W. Adams, "Effect of Dimethyl Sulfoxide on Zinc Uptake, Respiration, and RNA and Protein Metabolism in Bean (PHASEOLUS VULGARIS) Tissues," Amer. J. Bot. 57(7):794-799 (1970).

<2724>
CHEMICAL NAME: Methane, trichloronitro-
CHEMICAL COMMON NAME: Chloropicrin
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 2 oz
APPLICATION METHODS: Soil fumigated for 7 days then aerated 7 days before planting
EXPERIMENTAL CONDITIONS: Used as control treatment
EFFECTS: Plants taller but had smaller leaves than healthy controls
COMMENTS: Chloropicrin-proven fungicide for black shank disease
REFERENCE: Morgan, O.D., "The Use of Chemical Soil Drenches to Control PHYTOPHTHORA PARASITICA Var. NICOTIANAE and Their Phytotoxic Effects on Tobacco and Toxicity to Other Soil Flora," Plant Dis. Rep. 47(7):755-761 (1959).

<2725>
CHEMICAL NAME: Methane, triiodo-
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.3 mM
APPLICATION METHODS: Plants grown in solution containing chemical being tested
EXPERIMENTAL CONDITIONS: After germination in petri dishes, seedlings transplanted to reagent tube containing 6 g vermiculite and 25 ml Hoagland solution 2 that included 0.3 mM of chemical being tested; plants grown in growth chamber--16 hr photoperiod, 25 C day temperature and 12 C night temperature

<2725>
<2725> CONT.
EFFECTS: Strongly toxic to wild oat
COMMENTS: General toxic effects reported for all chemicals studied--growth retardation, tip burn followed by leaf scorch and death
REFERENCE: Chen, S-C. and R.M. Blofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<2726>
CHEMICAL NAME: Methane, triiodo-
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 6, 12.5, 25 and 50 kg/ha
APPLICATION METHODS: Chemical mixed thoroughly in top 7 cm of soil
EXPERIMENTAL CONDITIONS: Greenhouse studies; soil--silt topsoil, sand peat; fertilized after seeds planted
EFFECTS: 41% plant injury at 6 kg/ha, 66% at 12.5 kg/ha, 87% at 25 kg/ha and 100% at 50 kg/ha
COMMENTS: Specific toxic effects not reported
REFERENCE: Chen, S-C. and R.M. Blofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<2727>
CHEMICAL NAME: Methanesulfonamide, N-(4-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2728>
CHEMICAL NAME: Methanesulfonamide, N-phenyl-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2729>
CHEMICAL NAME: Methanesulfonamide, 1-fluoro-N-(4-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50 % kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2730>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(2-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI);Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2731>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(2,3,4,5-tetrafluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2732>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(2,3,4,5,6-pentafluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2733>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(2,3,5,6-tetrafluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2734>
<2734>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(2,4-dichloro-6-fluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2735>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(2,4-difluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2736>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(2,4,5-trichlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2737>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(2,4,5-trifluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2738>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(2,4,6-trichloro-6-fluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2739>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(2,5-dichlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2740>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(2,5-dimethyl-4-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2741>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(2,5-dimethylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2742>
<2742>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(2,6-dichloro-4-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2743>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(3-bromophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2744>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(3-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2745>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(3,4,5-trichlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2746>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(4-amino-2,5-dichlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2747>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(4-amino-3,5-dichlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2748>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(4-bromo-2,5-dimethylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2749>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(4-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI);Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2750>
<2750>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(4-methoxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2751>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-(5-chloro-2,4-dimethoxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2752>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-[2-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI);Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2753>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-[2,6-dinitro-4-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2754>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-[3-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI);Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2755>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-[4-(methylsulfinyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2756>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-[4-(methylthio)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2757>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-phenyl-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI);Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2758>

<2759>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-phenyl-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2759>
CHEMICAL NAME: Methanesulfonamide, 1,1-difluoro-N-2-(4-methylthiazolyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2760>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(2-acetamidophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2761>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(2-acetylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--4 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2762>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(2-aminophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2763>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(2-bromophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2764>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(2-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2765>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(2-cyanophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2766>
<2766>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(2-fluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted
1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2767>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(2-hydroxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted
1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2768>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(2-iodophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted
1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2769>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(2-methoxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted
1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2770>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(2-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2771>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(3-acetamidophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as greasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2772>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(3-acetylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2773>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(3-aminophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2774>
<2774>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(3-bromophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2775>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(3-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2776>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(3-fluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2777>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(3-hydroxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2778>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(3-iodophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2779>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(3-mercaptophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2780>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(3-methoxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2781>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(3-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2782>
<2782>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(3-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2783>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-acetamidophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as greasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2784>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-acetylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2785>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-aminophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2786>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-bromophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2787>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A; soybeans--5 lb/A; corn--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill; cotton--greater than or equal to 50% kill; soybeans--greater than or equal to 50% kill; corn--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2788>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-cyanophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2789>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-ethylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2790>
<2790>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-fluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A; soybeans--10 lb/A; Corn--5 lb/A; cotton--1.25 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill; cotton--greater than or equal to 50% kill; soybeans--no effect; corn--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2791>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-hydroxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2792>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-iodophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--2.5 lb/A; soybeans--10 lb/A; corn--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill; cotton--no effect; soybeans--no effect; corn--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2793>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-mercaptophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2794>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-methoxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2795>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2796>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-(4-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2797>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[1,1'-biphenyl]-3-yl-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2798>
<2798>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[1,1'-biphenyl]-4-yl-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2799>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-(methylsulfinyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2800>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-(methylsulfonyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2801>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-(methylthio)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A; soybeans--10 lb/A; corn--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill; cotton--no effect; soybeans--no effect; corn--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2802>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2803>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)-phenyl]-
CHEMICAL COMMON NAME: Perfluidone
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Soil drench solution; applied at 0.4, 8, and 12 days after planting tubers
EXPERIMENTAL CONDITIONS: Laboratory study; environmental chamber controlled at 27 C (day) and 22 C (night) with 12 hr photoperiod and 60% RH; SD 8339 cytolcinin used as soil amendment (400 ppmw) to middle layer (horizon of soil in pots) as comparison
EFFECTS: Perfluidone mimics cytoleinins in breaking bulb dormancy and apical dominance, inducing basal bulb formation, and dwarfing short growth, as well as being phytotoxic (not evaluated)
COMMENTS: Cytolcinin-like activity along with specific phytotoxicity may result in herbicidal potency of perfluidone
REFERENCE: Bendixen, L.E. "Cytokinin Effects Induced in Purple Nutsedge by Perfluidone," Weed Sci. 23(6):445-447 (1975).

<2804>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)-phenyl]-
CHEMICAL COMMON NAME: Perfluidone
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Late spring application; spray treatment at rate of 50 gpa
EXPERIMENTAL CONDITIONS: Treatments to bluegrass sod and to plots of only nutsedge; 4 x 5 ft plots with 3 replications
EFFECTS: Grass area--2 lb/A gave 78% nutsedge control, 4 lb/A gave 94% control; soil area--2 lb/A gave 28% nutsedge; minor turfgrass toxicity
COMMENTS: Nutsedge control easier as season progresses; nutsedge easier to control on turfgrass than on bare soil; 1-inch rainfall after second spring application may have reduced effectiveness
REFERENCE: Jagschitz, J.A., "Postemergence Crabgrass and Nutsedge Control in Turfgrass with Herbicides," Proc. Northeast. Weed Sci. Soc. 29:376-381 (1975).

<2805>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)-phenyl]-
CHEMICAL COMMON NAME: Perfluidone
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preemergence spray; 15 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of nutsedge
COMMENTS: Cyperquat and bentazon in postemergence application most effective herbicides, and CGA-24705 and U-44344 in preplant incorporated application most effective; perfluidone most effective preemergence application
REFERENCE: Kurtz, W.L. and E.W. Stroube, "Control of Yellow Nutsedge by Various Herbicides," Proc. N. Cent. Weed Contr. Conf. 30:59 (1975).

<2806>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)-phenyl]-
CHEMICAL COMMON NAME: MBR-8251
PLANT: Grasses; Broadleaf weeds; Nutsedge, purple (CYPERUS ROTUNDUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 2 kg/ha
APPLICATION METHODS: Formulation--50% WP; applied 7 days after crop emergence; dry season application
EXPERIMENTAL CONDITIONS: Clay loam (pH 5.8, organic matter 2.6%); dry and wet season treatments; randomized block design with 3 replications; 3 by 5 sq. m plots; nitrogen applied as ammonium sulphate at rate of 120 kg/ha
EFFECTS: Minor rice toxicity; poor grass and broadleaf weed control; fair nutsedge control
COMMENTS: Herbicide combinations also tested
REFERENCE: Okafor, L.I. and S.K. De Datta, "Chemical Control of Perennial Nutsedge (CYPERUS ROTUNDUS) in Tropical Upland Rice," Weed. Res. 16(1):1-5 (1976).

<2807>
<2807>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)-phenyl]-
CHEMICAL COMMON NAME: Perfluidone
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Bluegrass, annual (POA ANNUA); Parsley-piert (ALCHEMILLA MICROCORPA); Speedwell, corn (VERONICA ARVENSIS); Clover, hop (TRIFOLIUM AGARIUM); Bermudagrass, common (CYNODON DACTYLON); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Preemergence spray; broadcast application in 376 l./ha water
EXPERIMENTAL CONDITIONS: 3-year test on golf courses, 1-year test at Georgia Experiment Station; loam, sandy clay loam, and sandy loam soils; DCPA, benefin, terbutol, bensulide used as summer chemical checks, pronamide, DCPA, and terbutol used as winter chemical checks; 1.5 by 3.0 m plots, randomized complete block design with 4 replications; summer tests--crabgrass control in turfgrass; winter tests--control of annual bluegrass, parsley-piert, corn speedwell and hop clover; visual ratings
EFFECTS: Crabgrass control--28% avg. for 8 tests (0-68% range); annual bluegrass control--2 years, 74 and 55%; parsley-piert control--2 years, 15 and 18%; corn speedwell control--2 years, 73 and 78%; hop clover control--2 years, 45 and 53%; no significant effect on Kentucky bluegrass or bermudagrass
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<2808>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)-phenyl]-
CHEMICAL COMMON NAME: Perfluidone
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.5 to 8.0 lb/A
APPLICATION METHODS: Preemergence; preplant incorporated (norflurazon only)
EXPERIMENTAL CONDITIONS: Field study; soils--Decatur clay loam and Lucedale sandy loam; time period--4 to 5 yr
EFFECTS: Effective grass control at 1.5 lb/A and broadleaf control at 3.0 lb/A with no adverse effect on cotton yield
COMMENTS: Control of annual grasses essentially complete with perfluidone; for broadleaf weeds, however, rates lower than 3.0 lb. not satisfactory; perfluidone caused substantial stunting of cotton, particularly at rates of 3.0 lb per acre or higher
REFERENCE: Buchanan, G.A., R.D. McLaughlin, and G.C. Weed, "Destun and Zorial-New Herbicides for Use in Cotton," Highl. Agric. Res. 22(1):6 (1975).

<2809>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)-phenyl]-
CHEMICAL COMMON NAME: Destun
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 4 kg/ha (10,000 ppm)
APPLICATION METHODS: Foliage spray, 400 l./ha
EXPERIMENTAL CONDITIONS: Tubers planted in pots, shoots emerged in 7-8 days; spraying after shoot establishment; pots placed in randomized blocks.
EFFECTS: Reduced tuber germination, shoot number, and tuber number
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<2810>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)-phenyl]-
CHEMICAL COMMON NAME: Perfluidone
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS); Bermudagrass, Tifton (CYNODON sp.); Bermudagrass, common (CYNODON DACTYLON); Zoysiagrass (ZOYSIA JAPONICAA); Centipede grass (EREMOCHLOA OPHIUROIDES); St. Augustine's grass (STENOTAPHRUM SECUNDUN)
EXPERIMENTAL DOSE: 4.5 and 9.0 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l/ha; one or two applications
EXPERIMENTAL CONDITIONS: Field study, soils--Cecil sandy loam, Cecil sandy clay loam, and Appling sand clay loam; greenhouse study; turfgrasses grown in 3.7 l pots
EFFECTS: At both rates, moderate control of nutsedge in spring applications but effective control in one summer application with moderate injury to turfgrasses
COMMENTS: Purple nutsedge control during initial year of treatment was 98 to 100% when bentazon applied in late spring, but control only 28 to 68% when applied in mid or late summer; perfluidone controlled 76 to 87% of purple nutsedge when applied in late spring and 95 to 100% when applied in late summer; bentazon treatments generally did not cause turf injury; in the field, perfluidone treatments injured St. Augustinegrass, zoysia grass, centipedegrass, and common bermudagrass
REFERENCE: Johnson, B.J., "Purple Nutsedge Control with Bentazon and Perfluidone in Turfgrasses," Weed Sci. 23(5):349-353 (1975).

<2811>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)-phenyl]-
CHEMICAL COMMON NAME: Perfluidone
PLANT: Pine, loblolly (PINUS TAEDA); Pine, slash (PINUS ELIOTTII); Pine, white (PINUS STROBUS); Weeds
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Postemergence; granular formulation
EXPERIMENTAL CONDITIONS: Trials in 8 southeastern states; application 4 to 6 weeks after seeding; randomized complete block design; 6 by 50 ft plotsize; irrigation 24 hr after treatment
EFFECTS: No seedling injury; poor to moderate weed control
REFERENCE: South, D.B., "Pre- and Postemergent Weed Control in Forest Nurseries," Proc. South. Weed Sci. Soc. 30:269-278 (1977).

<2812>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)-phenyl]-
CHEMICAL COMMON NAME: MBR-8251
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Nutsedge, purple (CYPERUS ROTUNDUS); Grasses; Broadleaf weeds; Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 2.0, 2.5, 3.0, 4.5, and 7.0 kg/ha
APPLICATION METHODS: Preemergence spray; 50% WP formulation
EXPERIMENTAL CONDITIONS: Randomized block design; weed control field studies, 4 replications; laboratory sugarcane toxicity tests, 6 replications
EFFECTS: Test 1--effective yellow nutsedge, grass, and broadleaf weed control at 2.25 and 4.5 kg/ha; test 3--moderate purple nutsedge and broadleaf weed control, not commercially acceptable after 84 days at 2 and 3 kg/ha; mass of harvested surgarcane reduced at 7.0 kg/ha
COMMENTS: 7.0 kg/ha, twice the recommended rate
REFERENCE: Iggo, G.A., "Results of Screening Pre-emergence Herbicides for Sugarcane," Proc. S. Afr. Sugar Technol. Assoc. 49:122-125(1975).

<2813>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)phenyl]-
CHEMICAL COMMON NAME: MBR-8251
PLANT: Spinach (SPINACIA OLERACEA); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1X10(-5) and 1X10(-4)M
APPLICATION METHODS: Solution addition
EXPERIMENTAL CONDITIONS: Laboratory study; spinach leaf microsome system; wheat and barley seed germination in petri plates
EFFECTS: At one of the concentrations, reduced phosphate incorporation into glycerides; reduced growth, and reduced polar lipids
COMMENTS: Dinoseb and MBR 8251 inhibited enzymic synthesis of glycerides IN VITRO; physiological significance confirmed in intact wheat seedlings; dinoseb and MBR 8251 inhibition of glyceride synthesis IN VIVO evidenced by buildup in free fatty acids and decrease in neutral and polar lipids
REFERENCE: St. John, J.B. and J.L. Hilton, "Lipid Metabolism as a Site of Herbicide Action," Weed Sci. 21(5):477-480 (1973).

<2814>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)phenyl]-
CHEMICAL COMMON NAME: MBR-8251
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-3), 10(-4), and 10(-5)M; poor control at 10(-6) and 10(-7)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2815>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)phenyl]-
CHEMICAL COMMON NAME: MBR-8251
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A; 50% WP
APPLICATION METHODS: Preemergence spray; combined herbicides and types of application
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7
EFFECTS: Slight control of crabgrass and moderate control of other weeds with slight damage to crop plants
COMMENTS: Control of crabgrass, pigweed, ragweed and lambsquarters in seeded cucumbers and squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence, and preemergence applications of chloramben methyl ester alone; in cucumbers only, bensulide preplant incorporatd + chloramben methyl ester preemergence, bensulide preplant incorporated + dinoseb preemergence over activated charcoal, and nitralin preemergence gave excellent full-season weed control
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<2816>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)phenyl]-
CHEMICAL COMMON NAME: MBR-8251
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Corn (ZEA MAYS); Cucumber (CUCUMIS SATIVUS); Bean, bush (PHASEOLUS HUMILIS); Tomato (LYCOPERSICON ESCULENTUM); Watermelon (CITRULLUS VULGARIS)
EXPERIMENTAL DOSE: 2, 4 and 8 lb/A
APPLICATION METHODS: Spring--surface treatments at 2, 4 and 8 lb/A, incorporated treatment at 4 lb/A; crop experiments--preplanting incorporated treatments at 2 and 4 lb/A
EXPERIMENTAL CONDITIONS: Spring field applications--4 x 20 ft plots with 3 replications, nutsedge studies; crop experiments--pot studies, vigor and growth injury determined 12 days after seeding and 17 days after emergence
EFFECTS: Field studies--incorporated treatment gave significant nutsedge control only at month 6 after application, 2 and 8 lb/A surface treatments gave excellent control through study, even at month 7, 4 lb/A surface gave significant control only at months 2 and 6 after application; crop studies--no significant effect on germination in any crop, 12 days after seeding, corn height significantly reduced

<2816>
<2816> CONT.
at 4 lb/A, 17 days after emergence, vigor of corn, beans and tomatoes significantly reduced at 2 and 4 lb/A and vigor of cucumber reduced at 4 lb/A, height of sweet corn and tomatoes also significantly reduced at 17 days
REFERENCE: Locascio, S.J. and W.L. Currey, "Yellow Nutsedge (CYPERUS ESCULENTUS) control and Vegetable Crop Tolerance with Various Herbicides," Proc. South. Weed Sci. Soc. 26:259-266 (1973).

<2817>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)phenyl]-
CHEMICAL COMMON NAME: MBR-8251
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Squash, summer (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence; postemergence application of BAS-3512 H only
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7; time period--1972
EFFECTS: moderate control of all weeds with moderate damage to crop plants
COMMENTS: Effective control of large crabgrass, redroot pigweed, common ragweed and lambsquarters in seeded cucumbers and summer squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence and preemergence applications of chloramben methyl ester alone
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<2818>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)phenyl]-
CHEMICAL COMMON NAME: Destun
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 4.0 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl-bromide-fumigated soil (Maverly loam); evaluation time--37 and 41 days; tubers recovered and weighed or replanted in vermiculite for further study
EFFECTS: Reduced shoot numbers, weight, and no tuber germination
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<2819>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)phenyl]-
CHEMICAL COMMON NAME: Destun
PLANT: Bean, snap (PHASEOLUS VULGARIS); Beet, sugar (BETA VULGARIS); Soybean (GLYCINE MAX); Carrot (DAUCUS CAROTA); Carrot (DAUCUS CAROTA); Onion (ALLIUM CEPA); Groundnut (PANAX TRIFOLIUM); Sunflower (HELIANTHUS ANNUUS); Pigweed (AMARANTHUS sp.); Purslane, common (PORTULACA OLERACEA); Santa Maria (PARTHENIUM HYSTEROPHORUS); (PHYLLANTHUS AMARUS); Wiregrass (ELEUSINE INDICA); Junglerice (ECHINOCHLOA COLONUM); Crabgrass (DIGITARIA INSULARIS); Nutsedge, purple (CYPERUS ROTUNDUS); Cabbage (BRASSICA OLERACEA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 2 and 4 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Loam soil; non-field experiments
EFFECTS: Crops in which safe at 2 kg/ha--cabbage, cucumber, snapbean, soybean, groundnut, and sunflower; crops in which unsafe at 2 kg/ha--beet, carrot, and onion; weed control at 2 kg/ha--good purple nutsedge control, moderate control of other weeds; crops in which safe at 4 kg/ha--groundnut; crops in which unsafe at 4 kg/ha--cabbage, cucumber, snapbean, soybean, and sunflower
COMMENTS: Promising herbicides from these studies tested in field
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<2820>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)phenyl]-
CHEMICAL COMMON NAME: MBR-8251
PLANT: Aeschynomene (AESCHYNOMENE AMERICANA); Amaranth (AMARANTHUS VIRIDIS); Sedge, annual (CYPERUS COMPRESSUS); Carpetweed (MOLLUGO VERTICILLATA); Crabgrass, large (DIGITARIA SANGUINALIS); Dogfennel (EUPATORIUM CAPILLIFOLIUM); Eclipta (ECLIPTA ALBA); Goosegrass (ELEUSINE INDICA); Groundcherry (PHYSALIS ANGULATA); Indigo, hairy (INDIGOFERA HIRSUTA); Hydrocotyle (HYDROCOTYLE UMBELLATA); Jussiacea (JUSSIACEA ANGUSTIFOLIA); Knotgrass (PASPALUM DISTICHUM); Nightshade, black (SOLANUM NIGRUM); Nutsedge, purple (CYPERUS ROTUNDUS); Sesbania, hemp (SESBANIA EXALTATA); Ryegrass, perennial (LOLIUM PERENNE); Spurge (EUPHORBIA sp.); Vaseygrass (PASPALUM URVILLEI); Petunia (PETUNIA HYBRIDA); Ageratum (AGERATUM HOUSTONIANUM); Gladiolus (GLADIOLUS GRANDIFLORUS)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: 50% WP formulation; June 29, July 27, and August 31 treatments
EXPERIMENTAL CONDITIONS: Field experiments; randomized complete block design; Myakka fine sand; plot size 279 sq. ft.; treatments replicated 4 times; 18 petunias, 18 ageratums and 25 gladiolus transplanted October 1; soil samples collected throughout experiment, ryegrass seeds sown to test residual activity; weed density assessed November 15
EFFECTS: Good control--carpet weed, dogfennel, ground cherry, nightshade, and sesbania; poor control--spurge and vaseygrass; poor to moderate control of other weeds; petunia fresh weight greater but not significantly than control, ageratum fresh weight much less than control, gladiolus fresh weight less than control but not significantly; ryegrass height and density significantly reduced by soil samples collected July 11, 27, and August 10
REFERENCE: Wilfret, G.J. and D.S. Burgis, "Weed Control in Petunia, Ageratum, and Gladiolus Grown in Open Fields," Proc. South. Weed. Sci. Soc. 30:197-204 (1977).

<2821>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)phenyl]-
CHEMICAL COMMON NAME: Perfluidone
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Yew, upright (TAXUS CUSPIDATA); Juniper, andorra (JUNIPERUS HORIZONTALIS); Oat (AVENA SATIVA); Carpetweed (MOLLUGO VERTICILLATA); Stinkgrass (ERAGROSTIS CILIANENSIS); Lamb's-quarters (CHENOPODIUM ALBUM); Horseweed (ERIGERON CANADENSIS); Purslane, common (PORTULACA OLERACEA); Panicum, fall (PANICUM DICHOTOMIFLORUM); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Grasses; Honeysuckle, Japanese (LONICERA JAPONICA)
EXPERIMENTAL DOSE: 3 and 6 lb/A
APPLICATION METHODS: Treatments after mechanical weeding; 50 gpa spray; WP formulation
EXPERIMENTAL CONDITIONS: Sandy loam soil; 12 plants per plot; 3 replications in randomized complete block design; weed control rating on July 13, plots hand weeded on July 22 and rated again in September; oat sown in fall to test residual activity
EFFECTS: Moderate carpetweed control, good grass control, and moderate overall weed control; no significant difference in fresh weight of junipers compared to weed control but yew vigor at 6 lb/A was significantly reduced; 63 and 73% stand of oats at 3 and 6 lb/A, respectively.
COMMENTS: Grass--crabgrass and stinkgrass; weeds--crabgrass, horseweed, purslane, fall panicum, and shepherds purse
REFERENCE: Ahrens, J.F., "Experimental Herbicides for Field-Grown Ornamentals," Proc. Northeast. Weed Sci. Soc. 30:297-302(1976).

<2822>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[2-methyl-4-(phenylsulfonyl)phenyl]-
CHEMICAL COMMON NAME: MBR-8251
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Moderate to effective control of nutsedge; slight effect on bluegrass sod
COMMENTS: Promising results with BAS-3510, BAS-3516; DSMA; MBR-8251, and S-21634; some turf injury noted for 2,4-D, MBR-8251, and S-21634
REFERENCE: Jagschitz, J.A., "Evaluation of Herbicides for Nutsedge Control in Turfgrass," Proc. Northeast. Weed Sci. Soc. 27:331-333 (1973).

<2823>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[3-(methylsulfonyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A; soybeans--2.5 lb/A; corn--2.5 lb/A; cotton--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill; cotton--greater than or equal to 50% kill; soybeans--greater than or equal to 50% kill; corn--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2824>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[3-(methylthio)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A; soybeans--1.25 lb/A; corn--1.25 lb/A; cotton--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill; cotton--greater than or equal to 50% kill; soybeans--greater than or equal to 50% kill; corn--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2825>
<2825>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[3-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2826>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[3-methylsulfinyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--10 lb/A; soybeans--2.5 lb/A; corn--2.5 lb/A; cotton--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater thanor equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill; cotton--no effect; soybeans--greater than or equal to 50% kill; corn--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2827>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[4-(methylsulfonyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--5 lb/A; soybeans--10 lb/A; corn--5 lb/A; cotton--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill; cotton--greater than or equal to 50% kill; soybeans--no effect; corn--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2828>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[4-(methylthio)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--5 lb/A; soybeans--10 lb/A; corn--5 lb/A; cotton--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill; cotton--greater than or equal to 50% kill; soybeans--no effect; corn--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted

<2828> CONT.
1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2829>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[4-methylsulfinyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--20 lb/A; soybeans--10 lb/A; corn--5 lb/A; cotton--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill; cotton--no effect; soybeans--no effect; corn--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2830>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-[4-trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2831>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-phenyl-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2832>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-2-benzothiazolyl-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic

<2832>
<2832> CONT.
effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2833>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-2-pyridinyl-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2834>
CHEMICAL NAME: Methanesulfonamide, 1,1,1-trifluoro-N-2-thiazolyl-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<2835>
CHEMICAL NAME: Methanesulfonanilide, 2,4-dichlorotrifluoro-
CHEMICAL COMMON NAME: MBR-3356
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 1.7 kg/ha
APPLICATION METHODS: Preemergence treatments; April application
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Severe injury to all plants
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<2836>
CHEMICAL NAME: Methanesulfonanilide, 2,4-difluorotrifluoro-
CHEMICAL COMMON NAME: MBR-3957
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 1.1 and 2.2 kg/ha
APPLICATION METHODS: Preemergence April treatments
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Excessively injurious to legumes; weeds not controlled
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<2837>
CHEMICAL NAME: Methanesulfonate, ethyl-
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.2 M
APPLICATION METHODS: 150 seeds placed in test solution for 24 hr treatments
EXPERIMENTAL CONDITIONS: Trisomic barley seeds (trisomics 4 and 5); seeds pre-soaked in distilled water before treatment; seeds washed in tap water after treatment, chilled for one week, then germinated on blotters

<2837> CONT.
EFFECTS: 66% seed survival for trisomic 4, 70% survival for trisomic 5; 41.2% fertility for trisomic 4, fertility of control was 61.4%; 49.3% fertility for trisomic 5, control fertility was 63.5%
COMMENTS: Trisomic barley has extra chromosome, control was disomic
REFERENCE: Sayed, M.I., S.B. Helgason, and F.N. Larter, "Effect of Gamma Rays and Some Chemical Mutagens on Induction of Telotrisomics in Hordeum," Can. J. Genet. Cytol. 15:815-824 (1973).

<2838>
CHEMICAL NAME: Methanesulfonate, ethyl-
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0 to 392 mM
APPLICATION METHODS: 200 seeds soaked in test solutions for 12 hr
EXPERIMENTAL CONDITIONS: Flasks containing seeds thoroughly shaken; treatment temperature maintained at 20 + or - 2 C; seeds washed in water after treatment; 160 seeds used for raising m(1) generation in field, other seeds germinated in Petri dishes
EFFECTS: 51.98 + or - 13.97% pollen sterility at 294 mM compared with control (15.46 + or - 1.6%); seedling height drastically reduced at higher concentrations; no germination at higher concentrations
COMMENTS: Cytological abnormalities and mutagenicity also studied
REFERENCE: Nagaraja, R. and A.T. Natarajan, "Mutagenicity of Some Alkyl Alkanesulfonates in Barley," Mutat. Res. 2:132-148 (1965).

<2839>
CHEMICAL NAME: Methanesulfonate, ethyl-
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.08 M
APPLICATION METHODS: Seed soak for 10 hr
EXPERIMENTAL CONDITIONS: Laboratory/field study; treated seed planted and mutant progeny cross-fertilized or self-pollinated
EFFECTS: Small chromosome deletion, chromosome breakage, aberrations, and point mutations
COMMENTS: 16 Sh(1) mutants obtained by treating kernels of Sh(1)Wx genotype; immunochemical analysis of 20-day-old endosperms of newly obtained Sh(1) mutants showed that 6 were CRM(+) (form cross reacting material with Sh(1) protein) and 10 were CRM(-); mutants further studied by starch gel electrophoresis
REFERENCE: Chourey, P.S. and D. Schwartz, "Ethyl Methanesulfonate Induced Mutations of the Sh(1) Protein in Maize," Mut. Res. 12:151-157 (1971).

<2840>
CHEMICAL NAME: Methanesulfonate, ethyl-
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.0125 to 0.05 M
APPLICATION METHODS: Pre-soaked (24 hr) seed immersed in test solutions for 4 hr
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--up to 72 hr
EFFECTS: Inhibited shoot elongation, seedling growth, and RNA polymerase activity
COMMENTS: Ethyl methanesulfonate treatments reduced shoot elongation, seedling growth, and chromatin-directed RNA polymerase activity of shoot tissues; chromatin polymerase activity of control seedlings peaked at 24 hr; peak delay up to 12 hr by chemical mutagen treatment
REFERENCE: Leffler, H.R., T.J. O'Brien, D.V. Glover, and J.H. Cherry, "Growth of RNA Synthesis in Maize Seedlings Treated With Ethyl Methanesulfonate," Biochem. & Biophys. Res. Comm. 38(2):224-230 (1970).

<2841>
CHEMICAL NAME: Methanesulfonate, methyl
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0 to 28 mM
APPLICATION METHODS: 200 seeds soaked in test solutions for 12 hr
EXPERIMENTAL CONDITIONS: Flasks containing seeds thoroughly shaken; treatment temperature maintained at 20 + or - 2 C; seeds washed in water after treatment; 160 seeds used for raising m(1) generation in field, other seeds germinated in Petri dishes
EFFECTS: 23 mM caused 29.66 + or - 4.16% pollen sterility compared to control (15.46 + or - 1.6% sterility); seedling height drastically reduced at higher concentrations; seeds did not germinate at high concentrations
COMMENTS: Cytological abnormalities and mutagenicity also studied
REFERENCE: Nagaraja, R. and A.T. Natarajan, "Mutagenicity of Some Alkyl Alkanesulfonates in Barley," Mutat. Res. 2:132-148 (1965).

<2842>
CHEMICAL NAME: Methanesulfonate, methyl
CHEMICAL COMMON NAME: Methyl methanesulfonate
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.045 M
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory and field studies; first cell division after treatment studied (laboratory); chlorophyll mutation rate determined in next generation (field)
EFFECTS: Chromosome damage and DNA decomposition
COMMENTS: Most biological effects of MMS was damage of gene material; DEP acted as antimetabolite not provoking mutation and chromosomal aberrations primarily; DEP inhibited enzymes, RNase, and DNase, without affecting nucleic acids
REFERENCE: Federosak, I. and L. Ehrenberg, "Effects of Diethyl Pyrocarbonate and Methyl Methanesulfonate on Nucleic Acids and Nucleases," Acta Chem. Scand. 20:107-112 (1966).

<2843>
<2843>
CHEMICAL NAME: Methanesulfonate, n-butyl-
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0 to 427 nM
APPLICATION METHODS: 200 seeds soaked in test solutions for 12 hr
EXPERIMENTAL CONDITIONS: Flasks containing seeds thoroughly shaken; treatment temperature maintained at 20 + or - C; seeds washed in water after treatment; 160 seeds used for raising m(1) generation in field, other seeds germinated in Petri dishes
EFFECTS: 49.42 + or - 5.64% pollen sterility at 427 nM compared with control (15.46 + or - 1.6%); seedling height reduced at higher concentrations
COMMENTS: Cytological abnormalities and mutagenicity also studied
REFERENCE: Nagaraja, R. and A.T. Natarajan, "Mutagenicity of Some Alkyl Alkanesulfonates in Barley," Mutat. Res. 2:132-148 (1965).

<2844>
CHEMICAL NAME: Methanesulfonate, n-propyl-
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0 to 668 nM
APPLICATION METHODS: 200 seeds soaked in test solutions for 12 hr
EXPERIMENTAL CONDITIONS: Flasks containing seeds thoroughly shaken; treatment temperature maintained at 20 + or - C; seeds washed in water after treatment; 160 seeds used for raising m(1) generation in field, other seeds germinated in Petri dishes
EFFECTS: 50.79 + or - 4.72% pollen sterility at 668 nM compared with control (15.46 + or - 1.6%); seedling height reduced at higher concentrations
COMMENTS: Cytological abnormalities and mutagenicity also studied
REFERENCE: Nagaraja, R. and A.T. Natarajan, "Mutagenicity of Some Alkyl Alkanesulfonates in Barley," Mutat. Res. 2:132-148 (1965).

<2845>
CHEMICAL NAME: Methanesulfonic acid, ethyl ester
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2 and 4 ppth
APPLICATION METHODS: Dry seeds (12% water) immersed in aqueous solution of chemical with continuous stirring at 25 C for 8 hr
EXPERIMENTAL CONDITIONS: After treatment, seeds washed in running tap water (1 min) and sown in greenhouse; survivors later transplanted to field; tillering, sterility, seeds per ear, plantlets per spike, mutations on spike basis, and mutant plantlets studied
EFFECTS: Tillering--mean number of tillers similar to control; sterility--6.5 and 21.6 sterile spikes at 2 and 4 ppth, respectively compared to 0.5 for control; seeds per ear--small reduction compared to control; plantlets per spike--small reduction compared to control; mutations on spike basis--3% at 2 ppth and 20.2% at 4 ppth compared to 0.04% for control; mutant plantlets--0.4% at 2 ppth and 3.1% at 4 ppth
COMMENTS: Tillering data based on 100 plants; sterility, seeds per ear, and plantlets per spike based on 100 spikes; mutations on basis of 1000 spikes; effects compared to gamma rays
REFERENCE: Heslot, H., R. Ferrary, and J. Tempe, "The Relative Mutagenic Effects of Some Nitrosamines on Barley Seeds," Mutat. Res. 3:354-355 (1966).

<2846>
CHEMICAL NAME: Methanesulfonic acid, ethyl ester
PLANT: Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.005, 0.025, 0.05, and 0.5%
APPLICATION METHODS: Trial 1--seeds germinated in test solutions; trial 2--seedlings treated with 0.05% test solution
EXPERIMENTAL CONDITIONS: Effect on germination, chlorophyll, and growth recorded; germination observations after 8 and 24 hours
EFFECTS: Trial 1--complete lethality observed at 0.5%, 91% germination at 0.05% concentration; trial 2--0.05% caused chlorophyll deficient sectors in leaves of 75.6% of the seedlings and also retarded and abnormal growth
REFERENCE: Sharma, D. and J.G. Ross, "Effects of Ethyl Methane Sulphonate and Methyl Methane Sulphonate on Sorghum," Proc. S. D. Acad. Sci. 42:213 (1963).

<2847>
CHEMICAL NAME: Methanesulfonic acid, methyl ester
PLANT: Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.005, 0.025, 0.05, and 0.5%
APPLICATION METHODS: Trial 1--seeds germinated in test solutions; trial 2--seedlings treated with 0.005% test solution
EXPERIMENTAL CONDITIONS: Effect on germination, chlorophyll, and growth recorded; germination observations after 8 and 24 hours
EFFECTS: Trial 1--complete lethality at all but 0.005% concentration; trial 2--0.005% produced chlorophyll deficient sectors in 15.7% of the seedlings, no retarded or abnormal growth observed at 0.005%
REFERENCE: Sharma, D. and J.G. Ross, "Effects of Ethyl Methane Sulphonate and Methyl Methane Sulphonate on Sorghum," Proc. S. D. Acad. Sci. 42:213 (1963).

<2848>
CHEMICAL NAME: Methanethioamido, 1,1'-(trithio)bis[N,N-dimethyl]-
CHEMICAL COMMON NAME: Chemical 5400
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 600 ppm
APPLICATION METHODS: 50% dust; preplanting soil treatments, 50 ml solution to each of 20 pots
EXPERIMENTAL CONDITIONS: Greenhouse tests at 80 to 85 F; soil inoculated with PHYTOPHTHORA PARASITICA var. NICOTIANAE (causes black shank); 5 randomized replicates of 4 pots each for each chemical rate; chemical added once during test; plantings made 4 days and 3 weeks after treatment; chloropicrin treated soils as controls
EFFECTS: Plants transplanted after 4 days to inoculated soil were stunted; plants normal when grown in 3-week old treated soil
COMMENTS: Chloropicrin-proven fungicide for black shank disease
REFERENCE: Morgan, O.D., "The Use of Chemical Soil Drenches to Control PHYTOPHTHORA PARASITICA Var. NICOTIANAE and Their Phytotoxic Effects on Tobacco and Toxicity to Other Soil Flora," Plant Dis. Rep. 47(7):755-761 (1959).

<2849>
CHEMICAL NAME: Methanimidamide, N,N-dimethyl-N'-[3-[[(methylamino)carbonyl]-oxy]phenyl]]-
CHEMICAL COMMON NAME: Formetanate
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1.0 aihg
APPLICATION METHODS: 3 applications, 7 days apart with hand sprayer; 95% SP formulation
EXPERIMENTAL CONDITIONS: Cultivars--'snow ridge', 'yellow Delaware', 'torch', 'Delaware', 'snow pink', 'hostess', 'nob hill', yellow Bonnie Jean', and 'orange bowl'; initial application June 13
EFFECTS: No flower damage; moderate foliage damage
COMMENTS: Trade name, Corzol-- miticide; 'torch' not treated
REFERENCE: Poe, S.L., "Evaluations of Pesticides for Phytotoxicity on Chrysanthemum Flowers," Proc. Fl. State Hortic. Soc. 83:469-471 (1970).

<2850>
CHEMICAL NAME: Methanimidamide, N,N-dimethyl-N'-[3-[[(methylamino)carbonyl]-oxy]phenyl]]-
CHEMICAL COMMON NAME: Formetanate
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal--
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: No phytotoxicity
COMMENTS: 95% SP formulation; trade name Carzol
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<2851>
CHEMICAL NAME: Methanimidamide, N,N-dimethyl-N'-[3-[[(methylamino)carbonyl]-oxy]phenyl]]-
CHEMICAL COMMON NAME: Formetanate
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal--based upon formulation per 100 gal water
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: No phytotoxicity
COMMENTS: 95% SP formulation; trade name Carzol
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<2852>
CHEMICAL NAME: Methanimidamide, N,N-dimethyl-N'-[3-[[methylamino)carbonyl]oxy]phenyl]monohydrochloride
CHEMICAL COMMON NAME: Carzol
PLANT: Pine, Norfolk Island (ARAUCARIA EXCELSA); Copperleaf, Virginia (ACALYPHA VIRGINICA); Fern, Sprengeri asparagus (ASPARAGUS SPRENGERI); Schefflera (BRASSAIA ACTINOPHYLLA); Black olive; Palm, Madagascar (CHRYSALIDOCARPUS LUTESCENS); Sea grape (COCCOLOBA UVIFERA); Croton, gold dust (CODIAEUM VARIEGATUM); False aralia (LICYGOTHECA ELEGANTISSIMA); Dracaena, red edge (DRACAENA MARGINATA); Fig, Benjamin (FICUS BENJAMINA); Laurel, Cuban (FICUS RETUSA); Hibiscus, yellow (HIBISCUS CALYCINUS); Rose mallow (HIBISCUS ROSA-SINENSIS); Red ixora (IXORA COCCINEA); Jasmine, Wax (JASMINUM VOLUBILE); Privet (LIGUSTRUM JAPONICUM); Jessamine, Chalcas, orange (MURRAYA PANICULATA); Philodendron, self heading (PHILODENDRON SELLOUM); Pittosporum (PITTOSPORUM TOBIRO); Podocarpus (PODOCARPUS MACROPHYLLA); Viburnum (VIBURNUM SUSPENSUM); Palm, Christmas (VEITCHA MERILLI)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal (1X and 2X recommended rate), 95% WP
APPLICATION METHODS: Foliar spray; 3 applications once a week; sprayed to run-off at 40 psi
EXPERIMENTAL CONDITIONS: Field study; pot culture; slat shading; evaluation time--up to 5.5 wk
EFFECTS: Moderate damage of privet; slight damage of copperleaf, olive, laurel, hibiscus, and viburnum; no damage to remaining plants
COMMENTS: Araucaria, asparagus, chrysalidocarpus, coccoloba, codiaeum, dizygotheca, dracaena, philodendron, pittosporum, podocarpus, and veitcha tolerated most or all of these materials with essentially no damage;

<2852>
<2852> CONT.
acalypha, brassaia, bucida, ficus, hibiscus, ligustrum, and viburnum were sensitive to many or all of the materials; at recommended rates, diazinon and carbaryl produced the least number of phytotoxic symptoms on the least number of species
REFERENCE: Neel, P.L. and J.A. Reinert, "Phytotoxicity Evaluations of Ten Insecticides on Twenty-Three Species of Ornamental Plants Under Slat Shed Conditions," Proc. Fla. State Hortic. Soc. 88:586-590 (1976).

<2853>
CHEMICAL NAME: Methanimidamide, N'-(4-chloro-2-methylphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Chlordimeform
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1.0 aihq
APPLICATION METHODS: 3 applications, 7 days apart with hand sprayer; 90% WP formulation
EXPERIMENTAL CONDITIONS: Cultivars--'snow ridge', 'yellow Delaware', 'torch', 'Delaware', 'snow pink', 'hostess', 'nob hill', yellow Bonnie Jean', and 'orange bowl'; initial application June 13
EFFECTS: No flower injury; moderate foliage damage to all plants
COMMENTS: Trade name, Galecron--miticide; 'snow pink', 'hostess', and 'yellow Bonnie Jean' not treated
REFERENCE: Poe, S.L., "Evaluations of Pesticides for Phytotoxicity on Chrysanthemum Flowers," Proc. Fl. State Hortic. Soc. 83:469-471 (1970).

<2854>
CHEMICAL NAME: Methanimidamide, N'-(4-chloro-2-methylphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Chlordimeform
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 lb/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to all but dieffenbachia
COMMENTS: 95% SP formulation; trade name Fungal; rated very unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<2855>
CHEMICAL NAME: Methanimidamide, N'-(4-chloro-2-methylphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Chlordimeform
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence sprays in 50 gpa water in 1967 and 100 gpa water in 1968 and 1969; spread-sticker Triton B 1956 added to all sprays at 4 ml/gal rate; 4 lb/gal EC formulation
EXPERIMENTAL CONDITIONS: Field studies; randomized block designs with 4 replications; plots--4 rows wide by 25 ft in 1967 and 3 rows wide by 12 ft in 1968 and 1969; sprays applied for insect control every 7-day period, 9 applications made between last week of August and last week of October
EFFECTS: Foliage injury
COMMENTS: Chlordimeform applied for catepillar control; trade name Galecron
REFERENCE: Creighton, C.S., T.L. McFadden, and R.B. Cuthbert, "Control of Caterpillars on Tomatoes with Chemicals and Pathogens," J. Econ. Entomol. 64(3):737-739 (1971).

<2856>
CHEMICAL NAME: Methanimidamide, N'-(4-chloro-2-methylphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Chlordimeform
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 lb/100 gal--based upon concentration of formulation per 100 gal water
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to all but dieffenbachia
COMMENTS: 95% SP formulation; trade name Fungal; rated very unsafe; no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<2857>
CHEMICAL NAME: Methanimidamide, N'-(4-chloro-2-methylphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: C-8514
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: At higher rate, plant kill and total stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9

<2857> CONT.
organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<2858>
CHEMICAL NAME: Methanimidamide, N'-(4-chloro-2-methylphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Fundal
PLANT: Pine, Norfolk Island (ARAUCARIA EXCELSA); Copperleaf, Virginia (ACALYPHA VIRGINICA); Fern, Sprengeri asparagus (ASPARAGUS SPRENGERI); Schefflera (BRASSAIA ACTINOPHYLLA); Black olive; Palm, Madagascar (CHRYSALIDOCARPUS LUTESCENS); Sea grape (COCCOLOBA UVIFERA); Croton, gold dust (CODIAEUM VARIEGATUM); False aralia (LICYGOTHECA ELEGANTISSIMA); Dracaena, red edge (DRACAENA MARGINATA); Fig, Benjamin (FICUS BENJAMINA); Laurel, Cuban (FICUS RETUSA); Hibiscus, yellow (HIBISCUS CALYCINUS); Rose mallow (HIBISCUS ROSA-SINENSIS); Red ixora (IXORA COCCINEA); Jasmine, Wax (JASMINUM VOLUBILE); Privet (LIGUSTRUM JAPONICUM); Jessamine, Chalcas, orange (MURRAYA PANICULATA); Philodendron, self heading (PHILODENDRON SELLOUM); Pittosporum (PITTOSPORUM TOBIRO); Podocarpus (PODOCARPUS MACROPHYLLA); Viburnum (VIBURNUM SUSPENSUM); Palm, Christmas (VEITCHA MERILLI)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal (1X and 2X recommended rate), 95% WP
APPLICATION METHODS: Foliar spray; 3 applications once a week; sprayed to run-off at 40 psi
EXPERIMENTAL CONDITIONS: Field study; pot culture; slat shading; evaluation time--up to 5.5 wk
EFFECTS: Slight damage to schefflera, olive, hibiscus, laurel, privet, jessamine, jessamine, pittosporum, and viburnum with no damage of remaining plants
COMMENTS: Araucaria, asparagus, chrysalidocarpus, coccoloba, codiaeum, dizygotheca, dracaena, philodendron, pittosporum, podocarpus, and veitcha tolerated most or all of these materials with essentially no damage; acalypha, brassaia, bucida, ficus, hibiscus, ligustrum, and viburnum were sensitive to many or all of the materials; at recommended rates, diazinon and carbaryl produced the least number of phytotoxic symptoms on the least number of species
REFERENCE: Neel, P.L. and J.A. Reinert, "Phytotoxicity Evaluations of Ten Insecticides on Twenty-Three Species of Ornamental Plants Under Slat Shed Conditions," Proc. Fla. State Hortic. Soc. 88:586-590 (1976).

<2859>
CHEMICAL NAME: Methanimidamide, N'-(4-chloro-2-methylphenyl)-N,N-dimethyl-, monohydrochloride
CHEMICAL COMMON NAME: Fundal SP
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence sprays in 50 gpa water in 1967 and 100 gpa water in 1968 and 1969; spread-sticker Triton B 1956 added to all sprays of 4 ml/gal
EXPERIMENTAL CONDITIONS: Field studies; randomized block designs with 4 replications; plots--4 rows wide by 25 ft in 1967 and 3 rows wide by 12 ft in 1968 and 1969; sprays applied for insect control every 7-day period, 9 applications made between last week of August and last week of October
EFFECTS: Foliage injury
COMMENTS: Fundal applied for catepillar control
REFERENCE: Creighton, C.S., T.L. McFadden, and R.B. Cuthbert, "Control of Caterpillars on Tomatoes with Chemicals and Pathogens," J. Econ. Entomol. 64(3):737-739 (1971).

<2860>
CHEMICAL NAME: Methyl iodide complex, ethylenetrithiocarbonate-
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 25, 50, 100 and 150 kg/ha
APPLICATION METHODS: Chemical mixed thoroughly in top 7 cm of soil
EXPERIMENTAL CONDITIONS: Greenhouse studies; soil--silt topsoil, sand peat; fertilized after seeds planted
EFFECTS: No injury at 25 kg/ha, 60% injury at 50 kg/ha, 83% at 100 kg/ha and 100% at 150 kg/ha
COMMENTS: Specific toxic effects not reported
REFERENCE: Chen, S-C. and R.M. Elofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<2861>
CHEMICAL NAME: Morpholine, 2,6-dimethyl-4-tridecyl-
CHEMICAL COMMON NAME: Tridemorph
PLANT: Goatgrass (AEGILOPS sp.); Wheat (TRITICUM sp.); Rye (SECALE CEREALE); Barley (HORDEUM VULGARE); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Spray, 24 days after sowing
EXPERIMENTAL CONDITIONS: 14 species of goat-grass, 4 species of wheat with 17 different cultivars, and 2 cultivars each of rye, barley, and oats
EFFECTS: All species of goat-grass described as resistant, minor chlorosis noticed on some plants; 6 wheat cultivars rated resistant, others rated susceptible, some chlorosis noticed on all plants but more pronounced on suscpetible cultivars; rye, barley, and oats resistant, minor chlorosis detected
COMMENTS: Trade name, Calixine
REFERENCE: Siddiqui, K.A., "Resistance in Some Wild and Cultivated Grasses to the Phytotoxicity of a Systemic Fungicide," Experientia 28(19):1239-1240 (1972).

<2862>
<2862>
CHEMICAL NAME: Morpholine, 4-nitroso-
PLANT: Ladysthumb (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 1000mM
APPLICATION METHODS: Test compound dissolved in water or solvent--seed treatments for 24 hr at 25 C
EXPERIMENTAL CONDITIONS: Root length, degree of sterility and mutagenic activity recorded; root length expressed as % of control
EFFECTS: 41.5% root length; degree of sterility, 0.7; not found to be mutagenic
COMMENTS: Test concentration defined as sublethal
REFERENCE: Veleminsky, J. and T. Gichner, "The Mutagenic Activity of Nitrosoamines in ARABIDOPSIS THALIANA," Mutat. Res. 5:429-431 (1968).

<2863>
CHEMICAL NAME: Multi-film X77
CHEMICAL COMMON NAME: Multifilm X-77
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<2864>
CHEMICAL NAME: MV-687
CHEMICAL COMMON NAME: MV-687
PLANT: Broadleaf weeds; Grasses; Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 2.0 and 6.0 kg/ha
APPLICATION METHODS: Preplant, preplant incorporated (6-7.5 cm depth), preemergence, and postemergence sprays; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: In preplant application, moderate control of weeds with no adverse effect on tomatoes
COMMENTS: In direct-seeded tomatoes, FMC 25213 showed promise for providing broad spectrum weed control; CGA 24705 and Hoe 23408 found selective for annual grasses; with transplanted tomatoes, oxidiazon preplant and Hercules 26905 preplant incorporated provided effective weed control in addition to compounds mentioned for seeded crop
REFERENCE: Henne, R.C., "New Compounds with Potential for Weed Control in Tomatoes," Proc. Northeast. Weed Sci. Soc. 31:207-214 (1977).

<2865>
CHEMICAL NAME: Mytrol
CHEMICAL COMMON NAME: Mytrol
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.25 and 0.50 aihg
APPLICATION METHODS: 3 applications, 7 days apart with hand sprayer; 2% EC formulation; first treatment 0.25 aihg; second and third treatments, 0.50 aihg
EXPERIMENTAL CONDITIONS: Cultivars--'deep snow pink', 'marguerita', 'neptune', 'nob hill', 'orange bowl', 'snow ridge', 'white Anne', and 'yellow Delaware'; initial application August 25; injury recorded from highest rate applied
EFFECTS: Minor foliage damage to 'yellow Delaware'; moderate flower injury to 'nob hill'; minor flower injury to 'yellow Delaware', 'white Anne', 'deep snow pink', and 'orange bowl'
REFERENCE: Poe, S.L., "Evaluations of Pesticides for Phytotoxicity on Chrysanthemum Flowers," Proc. Fl. State Hortic. Soc. 83:469-471 (1970).

<2866>
CHEMICAL NAME: N-nitrosotomatidine
CHEMICAL COMMON NAME: N-nitrosotomatidine
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Reduced growth of wheat with undefined effects in pea test
COMMENTS: Of 524 compounds examined, 71 were found highly active and a further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<2867>
CHEMICAL NAME: Naphtha
CHEMICAL COMMON NAME: Naphtha
PLANT: Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 100, 200, and 500 ppm
APPLICATION METHODS: Solution addition to filter paper in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--75 F; evaluation time--48 hr; germinated seed selected and exposed

<2867> CONT.
EFFECTS: Reduced growth at all concentrations; field study essentially corroborated results
COMMENTS: Phytotoxic effect of insecticide fertilizer mixtures attributed to fertilizer which interferred with uptake of water required by seed for germination, or to insecticide or solvent which may cause seedling damage; phorate and diazinon were more phytotoxic than Trithion or heptachlor in field and laboratory tests; insecticide solvent Velsicol AR-60 was more phytotoxic than xylene--depressed seedling emergence significantly in the field
REFERENCE: Allen, W.R., W.L. Askew, and K. Schreiber, "Effect of Insecticide Fertilizer Mixtures and Seed Treatments on Emergence of Sugar Beet Seedlings," J. Econ. Ent. 54(1):181-187 (1961).

<2868>
CHEMICAL NAME: Naphthalene
CHEMICAL COMMON NAME: Naphthalene
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: No damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2869>
CHEMICAL NAME: Naphthalene
CHEMICAL COMMON NAME: Naphthalene
PLANT: Barley (HORDEUM VULGARE); Alfalfa (MEDICAGO SATIVA); Ryegrass, perennial (LOLIUM PERENNE); Flax (LINUM USITATISSIMUM); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 25 g/one qt seed
APPLICATION METHODS: Added to seed stored in open or closed glass jars
EXPERIMENTAL CONDITIONS: Laboratory study; time period--1957 to 1963; seed stored in ambient conditions (temperature and humidity) inside storage building
EFFECTS: In closed containers, slight reduction in germination of barley and alfalfa, severe or total germination reduction of flax and cotton, and no effect on germination of ryegrass seed
COMMENTS: Open containers more satisfactory than closed when paradichlorobenzene and naphthalene used as seed-storage chemicals; DDT reduced seed viability the least; Ceresan M convenient to use, but decreased germination; naphthalene did not decrease seed viability as rapidly as paradichlorobenzene, which decreased germination faster than other chemicals
REFERENCE: Day, A.D. and R.K. Thompson, "Some Effects of Paradichlorobenzene, Naphthalene, DDT and Ceresan on the Germination of Field Crop Seeds," J. Agron. 57(1):321-322 (1965).

<2870>
CHEMICAL NAME: Naphthalene, decahydro-
CHEMICAL COMMON NAME: Decalin
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Severe damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2871>
CHEMICAL NAME: Naphthenic acid, copper salt
CHEMICAL COMMON NAME: Copper naphthenate
PLANT: Cotoneaster (COTONEASTER DIVARICATA)
EXPERIMENTAL DOSE: 0.05, 0.1, 0.2, 0.3, 0.4, 0.8 and 4.0%
APPLICATION METHODS: Copper naphthenate solution added to burlap root balls
EXPERIMENTAL CONDITIONS: Root balls of established plants wrapped in 213 g jute burlap; burlap treated with solutions of chemical; plants replanted in 1 gal containers in mixture of 1 soil:1 sand:1 perlite medium; after 15 wk growth, plants pruned to check new growth for copper toxicity
EFFECTS: Copper naphthenate treated burlap not toxic at any level studied
COMMENTS: Copper naphthenate added to slow deterioration of burlap root balls after planting
REFERENCE: Kuhns, L.J. and T.D. Sydnor, "Phytotoxicity of Copper Treated Burlap on Balled and Burlapped COTONEASTER DIVARICATA Rehd. & Wils," Hortscience 10(6):613-614 (1975).

<2872>
<2872>
CHEMICAL NAME: Naphthol[2,3-b]furan-2(3H)-one, 3a,5,6,7,8,8a,9,9a-octahydro-5, 8a-dimethyl-3-methylene-, [3aR-(3a, alpha, 5 beta, 8a beta, 9a alpha]-
CHEMICAL COMMON NAME: Alantolactone
PLANT: Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 10 to 100 ppm; 0.01% Triton B-1956
APPLICATION METHODS: Seed in contact with solutions
EXPERIMENTAL CONDITIONS: Laboratory study; seed germinatin; temperature--30 C; in dark; evaluation time--120 hr
EFFECTS: Reduced germination, growth, respiration, and starch/protein degradation
COMMENTS: Phytotoxic action of alantolactone evident by inhibitory effects on seed germination, seedling growth, rate of respiration, and degradation of starch and proteins in mung beans; some amino acids, bases of nucleic acids, and gibberellic acid partially alleviated alantolactone-induced inhibition of seed germination
REFERENCE: Dalvi, R.R., B. Singh, and D.K. Salunkhe, "A Study on Phytotoxicity of Atlantolactone," Chem.-Biol. Interactions 3:13-18 (1971).

<2873>
CHEMICAL NAME: Necrocitin
CHEMICAL COMMON NAME: Necrocitin
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 to 10.0 micro g/ml
APPLICATION METHODS: Immersion of cut stems in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: At 0.5 micro g/ml and higher concentrations, severe wilting and leaf necrosis within 48 hr
COMMENTS: Necrocitin more toxic than lycomarasmin, alternarine, phytonivein, and piricularin but somewhat less toxic than alternaric acid, victoxinine, and fusicoccin
REFERENCE: Pawar, V.H. and M.J. Thirumalachar, "Necrocitin as a Wilt Toxin," Hindustan Antibiotics Bull. 8(3):126-128 (1966).

<2874>
CHEMICAL NAME: Neopentaene
CHEMICAL COMMON NAME: Neopentaene
PLANT: Pea, sweet (PISUM SATIVUM); Tomato (LYCOPERSICON ESCULENTUM); Blackgram (PHASEOLUS RADIATIS); Blackgram (PHASEOLUS MUNGO)
EXPERIMENTAL DOSE: 10, 20, 50 and 100 ug/ml
APPLICATION METHODS: Seed and root treatments
EXPERIMENTAL CONDITIONS: Seeds soaked in 50 ug/ml solution then germinated; seedling roots dipped in solutions
EFFECTS: No germination effect at 50 ug/ml; slight wilting of tomato and pea at 20 ug/ml; all seedlings showed wilting at 50 ug/ml
REFERENCE: Rahalkar, A.P., "Studies on Stability and Phytotoxicity of Neopentaene," Hind. Antibiot. Bull. 10(3):207-208 (1968).

<2875>
CHEMICAL NAME: Nickel
CHEMICAL COMMON NAME: Nickel
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 78-3410 ppm (natural soil component); 75-225 ppm (soil amendment, greenhouse study)
APPLICATION METHODS: Field and greenhouse studies; natural soil component in one study phase; soil amendment in greenhouse phase
EXPERIMENTAL CONDITIONS: Soils derived from basaltic rock in field study and sandy loam for greenhouse study
EFFECTS: Chlorosis ranged from very light to very severe and was directly correlated with concentration of nickel, cobalt, and chromium in soil; growth in height and yield was also affected; nickel and chromium were shown to be at toxic levels while cobalt was not; degrees of toxicity were related to levels of elements in soil extracts and in oat plants; chlorotic leaf banding resulted from nickel toxicity
COMMENTS: Problem of heavy metal toxicity in Australian crop soils studied; results applicable to many other countries
REFERENCE: Anderson, A.J., D.R. Meyer, and F.K. Meyer, "Heavy Metal Toxicities: Levels of Nickel, Cobalt, and Chromium in the Soil and Plants Associated with Visual Symptoms and Variation in the Growth of an Oat Crop," Aust. J. Agric. Res. 24:557-571 (1973).

<2876>
CHEMICAL NAME: Nicotinic acid, 2-hydroxy-6-methyl-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 4.2 to greater than 3.2 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<2877>
CHEMICAL NAME: Nitric acid, ammonium salt
CHEMICAL COMMON NAME: Ammonium nitrate
PLANT: Radish (RAPHANUS SATIVUS); Ryegrass, perennial (LOLIUM PERENNE); Bentgrass, black (AGROSTIS GIGANTEA); Plants
EXPERIMENTAL DOSE: 100 lb/1000 sq ft
APPLICATION METHODS: Added to soil
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: Effective weed control with reduced germination of radish and ryegrass
COMMENTS: Several fertilizers and chemicals inhibited weed growth either by killing seeds or by killing seedlings shortly after germination; materials applied dry or as spray solutions and thoroughly mixed by cultivation or raking into upper 2 or 3 inches of soil; period of time after treatment before grass, radishes, alfalfa, or seedlings of tomato, cabbage, or other crops could be planted safely varied with different materials and amounts applied; sterilizing soils with fertilizers or chemicals appears very practical method of controlling weeds and fertilizing seedbeds in one operation; especially true of fertilizers which do not appreciably alter soil complex and which do not leave residual toxicity for long periods
REFERENCE: DeFrance, J.A., R.S. Bell, and T.E. Odland, "Killing Weed Seeds in the Grass Seedbed by the Use of Fertilizers and Chemicals," J. Am. Soc. Agron. 39:530-535 (1947).

<2878>
CHEMICAL NAME: Nitric acid, cadmium salt
CHEMICAL COMMON NAME: Cadmium nitrate
PLANT: Duckweed (LEMNA VALDIVIANA); Fern, floating (SALVINIA NATANS)
EXPERIMENTAL DOSE: 0.001 to 1.000 ppm
APPLICATION METHODS: Addition to culture solution in which plants were growing
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 to 26 C; light intensity--500 ft candles; photoperiod--16 hr; evaluation time--up to 21 da; 0.2% Arnon and Hoagland's culture solution
EFFECTS: Definite growth inhibition of both species at 0.05 ppm with bioaccumulation at all concentration levels
COMMENTS: Significant concentration effect for all metals analysed comparing water concentrations with plant levels; high levels of manganese and iron occurred in plants; only for these two metals was a significant correlation found between water and plant concentrations when compared on an individual basis; lead and cadmium also showed a quite good fit
REFERENCE: Hutchinson, T.C. and H. Czyrska, "Heavy Metal Toxicity and Synergism to Floating Aquatic Weeds," Verh. Internat. Verein. Limnol. 19:2102-2111 (1975).

<2879>
CHEMICAL NAME: Nitric acid, nickel (2+) salt
CHEMICAL COMMON NAME: CDEA
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.0 to 18.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: Effective weed control with no adverse effect on cotton at 9.0 lb/A for 60 day period
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<2880>
CHEMICAL NAME: Nitric acid, nickel (2+) salt
CHEMICAL COMMON NAME: Nickel nitrate
PLANT: Duckweed (LEMNA VALDIVIANA); Fern, floating (SALVINIA NATANS)
EXPERIMENTAL DOSE: 0.001 to 1.000 ppm
APPLICATION METHODS: Addition to culture solution in which plants were growing
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 to 26 Ci light intensity--500 ft candles; photoperiod--16 hr; evaluation time--up to 21 da; 0.2% Arnon and Hoagland's culture solution
EFFECTS: Reduced growth at 0.3 to 1.0 ppm; bioaccumulation at all concentrations
COMMENTS: Significant concentration effect for metals analysed comparing water concentrations with plant levels; high levels of manganese and iron occurred in plants; only for these two metals was a significant correlation found between water and plant concentrations when compared on an individual basis; lead and cadmium also showed a quite good fit
REFERENCE: Hutchinson, T.C. and H. Czyrska, "Heavy Metal Toxicity and Synergism to Floating Aquatic Weeds," Verh. Internat. Verein. Limnol. 19:2102-2111 (1975).

<2881>
CHEMICAL NAME: Nitric acid, silver (1+) salt
CHEMICAL COMMON NAME: Silver nitrate
PLANT: Duckweed (LEMNA VALDIVIANA); Fern, floating (SALVINIA NATANS)
EXPERIMENTAL DOSE: 0.001 to 1.000 ppm
APPLICATION METHODS: Addition to culture solution in which plants were growing
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 to 26 Ci light intensity--500 ft candles; photoperiod--16 hr; evaluation time--up to 21 da; 0.2% Arnon and Hoagland's culture solution
EFFECTS: Reduced growth and bioaccumulation at 0.5 ppm
COMMENTS: Significant concentration effect for metals analysed comparing water concentrations with plant

<2881>
<2881> CONT.
levels; high levels of manganese and iron occurred in plants; only for these two metals was a significant correlation found between water and plant concentrations when compared on an individual basis; lead and cadmium also showed a quite good fit
REFERENCE: Hutchinson, T.C. and H. Czyrska, "Heavy Metal Toxicity and Synergism to Floating Aquatic Weeds," Verh. Internat. Verein. Limnol. 19:2102-2111 (1975).

<2882>
CHEMICAL NAME: Nitric acid, silver (1+) salt
CHEMICAL COMMON NAME: Silver nitrate
PLANT: Cotton (GOSSYPIUM HIRSUTUM) ; Pea, sweet (PISUM SATIVUM) ; Orchid, hybrid white (CATTLEYA sp.)
EXPERIMENTAL DOSE: 15 to 750 mg/l
APPLICATION METHODS: Postemergence spray ; 0.1% Tween-20 added as surfactant
EXPERIMENTAL CONDITIONS: Environmental chamber; pot culture; plants exposed to 0.2 to 15.0 microliters ethylene; etiolated peas grown in darkness; cotton and orchid grown in 21 to 27 C temperature; 62 to 68% RH, 16 hr photoperiod, and 1400 ft-c
EFFECTS: Reversed effects of ethylene
COMMENTS: Ag applied as AgNO3, effectively blocked ability of exogenously applied ethylene to elicit classical (1) "triple" response in intact etiolated peas; (2) stimulated leaf, flower, and fruit abscission in cotton; and (3) induced senescence of orchids
REFERENCE: Bever, E.M., "A Potent Inhibitor of Ethylene Action in Plants," Plant Physiol. 58(3):268-271 (1976).

<2883>
CHEMICAL NAME: Nitric acid, sodium salt
CHEMICAL COMMON NAME: Sodium nitrate
PLANT: Radish (RAPHANUS SATIVUS); Ryegrass, perennial (LOLIUM PERENNE); Bentgrass, black (AGROSTIS GIGANTEA); Plants
EXPERIMENTAL DOSE: 100 lb/1000 sq ft
APPLICATION METHODS: Added to soil
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: Effective weed control with reduced germination of radish and ryegrass
COMMENTS: Several fertilizers and chemicals inhibited weed growth either by killing seeds or by killing seedlings shortly after germination; materials applied dry or as spray solutions and thoroughly mixed by cultivation or raking into upper 2 or 3 inches of soil; period of time after treatment before grass, radishes, alfalfa, or seedlings of tomato, cabbage, or other crops could be planted safely varied with different materials and amounts applied; sterilizing soils with fertilizers or chemicals appears very practical method of controlling weeds and fertilizing seedbeds in one operation; especially true of fertilizers which do not appreciably alter soil complex and which do not leave residual toxicity for long periods
REFERENCE: DeFrance, J.A., R.S. Bell, and T.E. Odland, "Killing Weed Seeds in the Grass Seedbed by the Use of Fertilizers and Chemicals," J. Am. Soc. Agron. 39:530-535 (1947).

<2884>
CHEMICAL NAME: Nitric acid, zinc salt
CHEMICAL COMMON NAME: Zinc nitrate
PLANT: Duckweed (LEMNA VALDIVIANA); Fern, floating (SALVINIA NATANS)
EXPERIMENTAL DOSE: 0.001 to 1.000 ppm
APPLICATION METHODS: Addition to culture solution in which plants were growing
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 to 26 C; light intensity--500 ft candles; photoperiod--16 hr; evaluation time--up to 21 da; 0.2% Arnon and Hoagland's culture solution
EFFECTS: Bioaccumulation in both species
COMMENTS: Significant concentration effect for all metals analysed comparing water concentrations with plant levels; high levels of manganese and iron occurred in plants; only for these two metals was a significant correlation found between water and plant concentrations when compared on an individual basis; lead and cadmium also showed a quite good fit
REFERENCE: Hutchinson, T.C. and H. Czyrska, "Heavy Metal Toxicity and Synergism to Floating Aquatic Weeds," Verh. Internat. Verein. Limnol. 19:2102-2111 (1975).

<2885>
CHEMICAL NAME: Nitrogen oxide
CHEMICAL COMMON NAME: NO(2)
PLANT: Oat (AVENA SATIVA); Radish (RAPHANUS SATIVUS); Swiss chard (BETA VULGARIS); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.125 to 1.0 ppm
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Environmental chamber; wind velocity--1.4 to 1.6 m/sec(-1), light intensity--45 to 50,000 lux, temperature--21 to 27 C, and RH--50 to 60%; time--3 days; pot culture of plants in soil: sand: peat (3:1:1) mix; charcoal filters controlled ambient pollution; 1-and 3-hr exposures
EFFECTS: Leaf damage; radish most sensitive
COMMENTS: Threshold for SO(2) injury to leaves was 0.75 ppm for about 1 hr; NO(2) caused no injury; in combination, phytotoxicity apparently enhanced by these toxicants but relatively high doses required to cause injury symptoms; at lower concentrations, no injury noted on oat, radish, tomato, and pinto bean lants
REFERENCE: Bennett, J.H., A.C. Hill, A. Soleimani, and W.H. Edwards, "Acute Effects of Combination of Sulfur Dioxide and Nitrogen Oxide on Plants," Environ. Pollut. 9(2):127-132 (1975).

<2886>
CHEMICAL NAME: Nitrogen oxide
CHEMICAL COMMON NAME: NO(2)
PLANT: Lily (LILIUM LONGIFLORUM)
EXPERIMENTAL DOSE: 0.57, 1.70, and 2.00 ppm
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Fumigation chamber; incubation at 28 C
EFFECTS: Total reduction of pollen viability at 2.00 ppm only after 2 and 5 hr of exposure; reduced pollen tube length at other concentrations/exposures
COMMENTS: Marked inhibition of tube elongation occurred with two combinations of two gases and moderate inhibition occurred with three combinations of two gases; major atmospheric pollutants such as SO(2), NO(2), and O(3) may enhance each other's phytotoxicity; aldehydes may be synergistic in their effects on plants
REFERENCE: Masaru, N., F. Syozo, and K. Saburo, "Effects of Exposure to Various Injurious Gases on Germination of Lily Pollen," Environ. Pollut. 11(3):181-187 (1976).

<2887>
CHEMICAL NAME: Nitrosoamine, dibutyl-
PLANT: Ladysthumb (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 30mM
APPLICATION METHODS: Test compound dissolved in water or solvent--seed treatments for 24 hr at 25 C
EXPERIMENTAL CONDITIONS: Root length, degree of sterility and mutagenic activity recorded; root length expressed as % of control
EFFECTS: 32.8% root length; no sterility; not found to be mutagenic
COMMENTS: Test concentration defined as sublethal
REFERENCE: Veleminsky, J. and T. Gichner, "The Mutagenic Activity of Nitrosoamines in ARABIDOPSIS THALIANA," Mutat. Res. 5:429-431 (1968).

<2888>
CHEMICAL NAME: Nitrosoamine, diethyl-
PLANT: Ladysthumb (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 225mM
APPLICATION METHODS: Test compound dissolved in water or solvent--seed treatments for 24 hr at 25 C
EXPERIMENTAL CONDITIONS: Root length, degree of sterility and mutagenic activity recorded; root length expressed as % of control
EFFECTS: 60.8% root length; degree of sterility, 0.4; not found to be mutagenic
COMMENTS: Test concentration defined as sublethal
REFERENCE: Veleminsky, J. and T. Gichner, "The Mutagenic Activity of Nitrosoamines in ARABIDOPSIS THALIANA," Mutat. Res. 5:429-431 (1968).

<2889>
CHEMICAL NAME: Nitrosoamine, dimethyl-
PLANT: Ladysthumb (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 490 mM
APPLICATION METHODS: Test compound dissolved in water or solvent--seed treatments for 24 hr at 25 C
EXPERIMENTAL CONDITIONS: Root length, degree of sterility and mutagenic activity recorded; root length expressed as % of control
EFFECTS: 65.7% root length; degree of sterility, 70.0; found to be mutagenic
REFERENCE: Veleminsky, J. and T. Gichner, "The Mutagenic Activity of Nitrosoamines in ARABIDOPSIS THALIANA," Mutat. Res. 5:429-431 (1968).

<2890>
CHEMICAL NAME: Nitrosoamine, ethyl-tert-butyl-
PLANT: Ladysthumb (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 125mM
APPLICATION METHODS: Test compound dissolved in water or solvent--seed treatments for 24 hr at 25 C
EXPERIMENTAL CONDITIONS: Root length, degree of sterility and mutagenic activity recorded; root length expressed as % of control
EFFECTS: 20.9% root length; degree of sterility, 0.1; not found to be mutagenic
COMMENTS: Test concentration defined as sublethal
REFERENCE: Veleminsky, J. and T. Gichner, "The Mutagenic Activity of Nitrosoamines in ARABIDOPSIS THALIANA," Mutat. Res. 5:429-431 (1968).

<2891>
CHEMICAL NAME: Nitrosoamine, ethylvinyl-
PLANT: Ladysthumb (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 100mM
APPLICATION METHODS: Test compound dissolved in water or solvent--seed treatments for 24 hr at 25 C
EXPERIMENTAL CONDITIONS: Root length, degree of sterility and mutagenic activity recorded; root length expressed as % of control
EFFECTS: 25.4% root length; degree of sterility, 54.6; found to be mutagenic
REFERENCE: Veleminsky, J. and T. Gichner, "The Mutagenic Activity of Nitrosoamines in ARABIDOPSIS THALIANA," Mutat. Res. 5:429-431 (1968).

<2892>
<2892>
CHEMICAL NAME: Nitrosoamine, methyl-tert-butyl-
PLANT: Ladysthumb (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 100 mM
APPLICATION METHODS: Test compound dissolved in water or solvent--seed treatments for 24 hr at 25 C
EXPERIMENTAL CONDITIONS: Root length, degree of sterility and mutagenic activity recorded; root length expressed as % of control
EFFECTS: 58.5% root length; degree of sterility, 5.1; not found to be mutagenic
COMMENTS: Test concentration defined as sublethal
REFERENCE: Veleminsky, J. and T. Gichner, "The Mutagenic Activity of Nitrosoamines in ARABIDOPSIS THALIANA," Mutat. Res. 5:429-431 (1968).

<2893>
CHEMICAL NAME: Nitrosoamine, methylbenzyl-
PLANT: Ladysthumb (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 20mM
APPLICATION METHODS: Test compound dissolved in water or solvent--seed treatments for 24 hr at 25 C
EXPERIMENTAL CONDITIONS: Root length, degree of sterility and mutagenic activity recorded; root length expressed as % of control
EFFECTS: 28.2% root length; degree of sterility, 5.1; found to be mutagenic
REFERENCE: Veleminsky, J. and T. Gichner, "The Mutagenic Activity of Nitrosoamines in ARABIDOPSIS THALIANA," Mutat. Res. 5:429-431 (1968).

<2894>
CHEMICAL NAME: Nitrosoamine, methylbutyl-
PLANT: Ladysthumb (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 60 mM
APPLICATION METHODS: Test compound dissolved in water or solvent--seed treatments for 24 hr at 25 C
EXPERIMENTAL CONDITIONS: Root length, degree of sterility and mutagenic activity recorded; root length expressed as % of control
EFFECTS: 64.8% root length; degree of sterility, 18.5, found to be mutagenic
REFERENCE: Veleminsky, J. and T. Gichner, "The Mutagenic Activity of Nitrosoamines in ARABIDOPSIS THALIANA," Mutat. Res. 5:429-431 (1968).

<2895>
CHEMICAL NAME: Nitrosoamine, methylethyl-
PLANT: Ladysthumb (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 100 mM
APPLICATION METHODS: Test compound dissolved in water or solvent--seed treatments for 24 hr at 25 C
EXPERIMENTAL CONDITIONS: Root length, degree of sterility and mutagenic activity recorded; root length expressed as % of control
EFFECTS: 45.5% root length; degree of sterility, 21.3; found to be mutagenic
REFERENCE: Veleminsky, J. and T. Gichner, "The Mutagenic Activity of Nitrosoamines in ARABIDOPSIS THALIANA," Mutat. Res. 5:429-431 (1968).

<2896>
CHEMICAL NAME: Nitrosoamine, methylphenyl-
PLANT: Ladysthumb (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 20mM
APPLICATION METHODS: Test compound dissolved in water or solvent--seed treatments for 24 hr at 25 C
EXPERIMENTAL CONDITIONS: Root length, degree of sterility and mutagenic activity recorded; root length expressed as % of control
EFFECTS: 50.5% root length; degree of sterility, 0.2; not found to be mutagenic
COMMENTS: Test concentration defined as sublethal
REFERENCE: Veleminsky, J. and T. Gichner, "The Mutagenic Activity of Nitrosoamines in ARABIDOPSIS THALIANA," Mutat. Res. 5:429-431 (1968).

<2897>
CHEMICAL NAME: Nitrous acid, sodium salt
CHEMICAL COMMON NAME: Sodium nitrite
PLANT: Radish (RAPHANUS SATIVUS); Ryegrass, perennial (LOLIUM PERENNE); Bentgrass, black (AGROSTIS GIGANTEA); Plants; Redtop (AGROSTIS ALBA); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 20 and 30 lb/1000 sq ft
APPLICATION METHODS: Added to soil
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: At 30 lb rate, effective weed control with delayed germination of radish and ryegrass
COMMENTS: Several fertilizers and chemicals inhibited weed growth either by killing seeds or by killing seedlings shortly after germination; materials applied dry or as spray solutions and thoroughly mixed by cultivation or raking into upper 2 or 3 inches of soil; period of time after treatment before grass, radishes, alfalfa, or seedlings of tomato, cabbage, or other crops could be planted safely varied with different materials and amounts applied; sterilizing soils with fertilizers or chemicals appears very practical method of controlling weeds and fertilizing seedbeds in one operation; especially true of fertilizers which do not appreciably alter soil complex and which do not leave residual toxicity for long periods
REFERENCE: DeFrance, J.A., R.S. Bell, and T.E. Odland, "Killing Weed Seeds in the Grass Seedbed by the Use of Fertilizers and Chemicals," J. Am. Soc. Agron. 39:530-535 (1947).

<2898>
CHEMICAL NAME: Nogalamycin
CHEMICAL COMMON NAME: Nogalamycin
PLANT: (TRADESCANTIA PALUDOSA)
EXPERIMENTAL DOSE: 10 micro g/ml; 0.2% Tween 20
APPLICATION METHODS: Applied to apex of shoot after emergence of first bud
EXPERIMENTAL CONDITIONS: Greenhouse/laboratory study; anther cytology studied
EFFECTS: Chromosome aberrations of varied types
COMMENTS: Pachytene and diplotene cells did not reveal analysable inversion loops; deletions and abnormal pairing observed among NM-treated material; abnormal pairing of chromosomes included loose pairing as well as non-pairing regions
REFERENCE: Bempong, M.A., "Cytological Effect of Nogalamycin in TRADESCANTIA PALUDOSA Microsporocytes," Mut. Res. 21:323-326 (1973).

<2899>
CHEMICAL NAME: Nonanedioic acid
CHEMICAL COMMON NAME: Azelaic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 3.2%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<2900>
CHEMICAL NAME: Nonanoic acid
CHEMICAL COMMON NAME: Nonoic acid
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: Moderate damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2901>
CHEMICAL NAME: Nonene, n-1-
CHEMICAL COMMON NAME: N-non-I-ene
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Moderate damage of leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2902>
CHEMICAL NAME: NP-128
CHEMICAL COMMON NAME: NP-128
PLANT: Spinach (SPINACIA OLERACEA); Plants
EXPERIMENTAL DOSE: 7.0 and 10.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; single and double spinach seeding rates and normal and delayed times
EFFECTS: Effective weed control but moderate reduction of spinach yield
COMMENTS: No chemical increased yield of spinach; two chemicals in normal seeding plots and 5 chemicals in delayed seeding plots gave as good yield as untreated and significant increase in weed control
REFERENCE: Noll, C.J. and M.L. Odland, "Pre-Emergence Weeding of Spinach With Chemical Herbicides," Proc. N.E. Weed Cont. Conf. 5:115-117 (1951).

<2903>
<2903>
CHEMICAL NAME: NP-128
CHEMICAL COMMON NAME: NP-128
PLANT: Plants; Bean, lima (PHASEOLUS LIMENSIS); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 5.0 and 10.0 lb/A
APPLICATION METHODS: Preemergence spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate weed control at 10.0 lb/A with no adverse effect on lima bean with stand reduction of direct-seeded cauliflower but no adverse effect on transplanted cauliflower
COMMENTS: Premerge, Dow General and K-1131-Na, and all dinitros, gave excellent control of weeds with no bean crop injury for two months
REFERENCE: Jacob, W.C., "Pre-Emergence Weed Control in Lima Beans and Cauliflower," Proc. N.E. Weed Cont. conf. 5:1-5 (1951).

<2904>
CHEMICAL NAME: Nuclease, endoribo-, III
CHEMICAL COMMON NAME: RNA-ase
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 50 micro g
APPLICATION METHODS: Immersion of wheat coleoptiles for up to 120 hr
EXPERIMENTAL CONDITIONS: Laboratory study; coleoptiles of different ages (up to 120 hr) studied
EFFECTS: Inhibited template activity (and therefore RNA synthesis) of wheat chromatin
COMMENTS: RNA synthesis occurs on template of chromatin isolated from wheat shoots and was inhibited by actinomycin D, RNase, and rifamycin; IAA and GA appear to have different effects on changes of template activity of chromatin in cells of different ages
REFERENCE: Likholat, T.V. and V.A. Pospelov, "The Influence of B-Indoleacetic Acid and Gibberellin on the Template Activity of the Chromatin of Wheat Coleoptiles of Different Ages," FEBS Letters 40(1):77-79 (1974).

<2905>
CHEMICAL NAME: Octadecanoic acid, 9-(acetyloxy)-10-methoxy-methyl ester, mercury salt
PLANT: Dandelion, common (TARAXACUM OFFICINALE)
EXPERIMENTAL DOSE: 0.1% solution
APPLICATION METHODS: Sprayed on weeds at rate of 1 liter of solution per 50 sq ft
EXPERIMENTAL CONDITIONS: 0.1% solution determined to be safe to lawn grasses after numerous tests with unmentioned concentrations
EFFECTS: Dandelion killed within 24 hr; lawn grasses not harmed
COMMENTS: Compound kills by attacking root; researcher provides preparation method
REFERENCE: Ralston, A.W., C.W. Christensen, and G. Josh, "Use of Mercurated Fatty Compounds as Weed Killers," Oil Soap:5-7 (1937).

<2906>
CHEMICAL NAME: Octane
CHEMICAL COMMON NAME: Normal-octane
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) for bean at 35x10(-5)M and no toxicity to parsnip at saturation
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<2907>
CHEMICAL NAME: Octane-1-thiol
CHEMICAL COMMON NAME: Octane-I-thiol
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: No damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2908>
CHEMICAL NAME: Octane, 2,7-dimethyl-
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) for bean at 17.6x10(-5) M and no toxicity for parsnip at saturation
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<2909>
CHEMICAL NAME: Octanoic acid
CHEMICAL COMMON NAME: Octoic acid
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: Slight damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2910>
CHEMICAL NAME: Octanoic acid, 2,6-dibromo-4-cyanophenol ester
CHEMICAL COMMON NAME: Bromoxynil, octanoate ester
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 0.25 and 1.0 kg/ha
APPLICATION METHODS: Postemergence spray at a volume rate of 352 l./ha and pressure of 2.1 kg/cm (2); 25% EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse study; plants watered from above before spraying and from below after spraying; 2 replications; visual assessments at intervals, dry weights determined 8 weeks after spraying
EFFECTS: Marginal necrosis of exposed leaves within a few days after spraying; many necrotic leaves after 2 weeks; later regrowth normal; significant reduction in dry weight compared to control
REFERENCE: Clay, D.V., "The Response of Strawberry to a Range of Foliage Acting Herbicides," Proc. Brit. Weed Control Conf. 11:409-416 (1972).

<2911>
CHEMICAL NAME: Octene, n-1-
CHEMICAL COMMON NAME: Normal-octene-1
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) for bean at 49.1x10(-5) M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<2912>
CHEMICAL NAME: Octene, n-2
CHEMICAL COMMON NAME: Normal-octene-2
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) for bean at 46.8x10(-5) M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<2913>
<2913>
CHEMICAL NAME: Octopyranoside, methyl
6,8-dideoxy-6-[[(1-methyl-4-propyl-2-pyrrolidinyl)carbonyl]amino]-1-thio,(2S-tra
ns)-D-erthyro-alpha-D-galacto-
CHEMICAL COMMON NAME: Lincomycin
PLANT: Barley (HORDEUM VULGARE); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 10 to 100 micro g/ml
APPLICATION METHODS: Immersion in assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated barley leaves and pea shoots
EFFECTS: Chlorosis and reduced chlorophyll protein synthesis in complex I
COMMENTS: Greening barley and pea leaves treated with lincomycin had reduced chlorophyll content; lincomycin did not alter proportion of chlorophyll in chlorophyll-protein complex II (CPII) but greatly reduced that in chlorophyll-protein complex I (CPI); difference spectra showed chloroplasts from lincomycin-treated leaves deficient in at least two long wavelength forms of chlorophyll a
REFERENCE: Hiller, R.G., T.B.G. Pilger, and S. Genge, "Effect of Lincomycin on the Chlorophyll Protein Complex I and Photosystem I Activity of Greening Leaves," Biochim. Biophys. Acta 460:431-444 (1977).

<2914>
CHEMICAL NAME: Oxathion
CHEMICAL COMMON NAME: Oxathion
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.025, 0.05, and 0.10%
APPLICATION METHODS: As spray in 625 l./ha of spray material; postemergence on 42-day old crop
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: Safe at all rates tested
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadyan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<2915>
CHEMICAL NAME: Oxazolidinedione
CHEMICAL COMMON NAME: OXD
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.5 to 8.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: No control of weeds or adverse effect on cotton
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<2916>
CHEMICAL NAME: Oxirane, methyl-, polymer with oxirane
CHEMICAL COMMON NAME: Pluronic L101
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: No adverse effect
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<2917>
CHEMICAL NAME: Oxirane, methyl-, polymer with oxirane, either with (1,2-ethanediyldinitrilo)tetrakis[propanol](4:1)
CHEMICAL COMMON NAME: Tetronic 901
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: No adverse effect
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<2918>
CHEMICAL NAME: Oxiranecarboxylic acid, potassium salt
CHEMICAL COMMON NAME: Potassium glycidate
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 10 and 20 mM
APPLICATION METHODS: Leaf discs floated in test solution
EXPERIMENTAL CONDITIONS: Tests included, (1) assay for inhibitors of glycolate biosynthesis, (2) photorespiration assay, and (3) photosynthetic carbon 14-labeled CO(2) uptake and photosynthetic products; detailed experimental conditions provided in paper
EFFECTS: 20mM gave 47% glycolate inhibition, 10mM inhibited glycolate synthesis 38%; photorespiration, inhibited about 38% at 20mM; photosynthetic rate increased by an average of 39% at 20mM
REFERENCE: Zelitch, I., "The Effect of Glycidate, an inhibitor of Glycolate Synthesis, on Photorespiration and Net Photosynthesis," Arch. Biochem. Biophys. 163:367-377 (1974).

<2919>
CHEMICAL NAME: Oxyfluorfen
CHEMICAL COMMON NAME: Oxyfluorfen
PLANT: Horseweed (CONYZA CANADENSIS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Foxtail, green (SETARIA VIRIDIS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.375 lb/A
APPLICATION METHODS: Preemergence and postemergence treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Mattapeake silt loam; field experiments, 1974 to 1976; 10 by 20 ft plots, randomized complete block design with 4 replications; visual ratings; soybeans planted after barley harvest--double cropping, no-tillage soybeans; June 10 soybean planting
EFFECTS: Unacceptable control of ragweed on July 7, acceptable control on Aug. 6; unacceptable horseweed control on both dates; barely acceptable foxtail control on July 7, good control on Aug. 6; minor soybean injury July 7, no injury Aug. 6
COMMENTS: All weeds except foxtail present at time of soybean planting and herbicide application; combinations with other herbicides also tested
REFERENCE: Parochetti, J.V., "Herbicides for No-Tillage Double Cropped Soybeans," Proc. Northeast. Weed Sci. Soc. 31:54-60 (1977).

<2920>
CHEMICAL NAME: Oxyfluorfen
CHEMICAL COMMON NAME: Oxyfluorfen
PLANT: Pine, loblolly (PINUS TAEDA); Pine, short-leaf (PINUS ECHINATA); Pine, slash (PINUS ELIOTTII); Weeds
EXPERIMENTAL DOSE: 0.25 and 0.5 lb/A
APPLICATION METHODS: Preemergence spray; EC formulation
EXPERIMENTAL CONDITIONS: Trials in 6 southeastern states; randomized complete block design; 6 by 50 ft plot size; 0.50 to 0.75 in. water applied after spraying; weed control and seedling tolerance determined
EFFECTS: No effect on seedlings; excellent early season and good total season weed control
REFERENCE: South, D.B., "Pre- and Postemergent Weed Control in Forest Nurseries," Proc. South. Weed Sci. Soc. 30:269-278 (1977).

<2921>
CHEMICAL NAME: Ozone
CHEMICAL COMMON NAME: Ozone
PLANT: Lettuce (LACTUCA SATIVA); Cress (LEPIDIUM SATIVUM)
EXPERIMENTAL DOSE: 30-35 pphm
APPLICATION METHODS: Plexiglass chamber system; 6 hr exposure
EXPERIMENTAL CONDITIONS: Environmental chamber study; soil--terralite and peatmoss mix; pot culture, one plant/pot; temperature, day/night-24/17 C; light intensity--20 Klx; photoperiod--16 hr; RH--60-80%; pretreatment with metal salt solutions, then fumigation exposure to ozone (30-35 pphm); evaluation time, one wk
EFFECTS: Cress plants that received soil application of cadmium showed markedly increased ozone-induced phytotoxicity in terms of visible leaf damage and pigment degradation; in lettuce, only pigment degradation evident based on chlorophyll analysis; soil application of zinc showed less ozone-induced phytotoxicity on cress and no pigment degradation in lettuce; compared with soil application, foliar application of zinc or cadmium produced less effects on ozone phytotoxicity; pigment degradation and metal uptake were also markedly effected
COMMENTS: Pretreatment of plants with cadmium or zinc had profound effect on extent of ozone injury
REFERENCE: Czuba, M. and D.P. Ormond, "Effects of Cadmium and Zinc on Ozone-Induced Phytotoxicity," Can. J. Bot. 52:645-649 (1974).

<2922>
CHEMICAL NAME: Ozone
CHEMICAL COMMON NAME: Ozone
PLANT: Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 44, 62 and 80 pphm
APPLICATION METHODS: Exposure chamber treatments, 4 hours in duration
EXPERIMENTAL CONDITIONS: Vermiculite soil; seedlings grown in growth chamber at 12 hr day length, day and night temperature of 30 C and 24 C respectively; leaves analyzed for change in nitrate reductase and chlorophyll content; exposure chamber--ozone generated by electrical discharge through oxygen stream; ozone exposure began 3 days after emergence
EFFECTS: Corn--70% water loss in leaves after 24 hr at 80 pphm, 80 pphm caused rapid loss of nitrite reductase activity that persisted throughout experiment, reduction in chlorophyll content and a small nitrate reductase decline (only significant at day 9), 62 pphm caused similar effects but to a less degree except that nitrate reductase activity was greater than control; 8-day old plants showed most damage; soybean--maximum sensitivity at plant age 15 days, 80 pphm caused reduction in nitrite and nitrate reductase activity and 60% drop in chlorophyll content by day 2, 44 pphm caused small but

<2922>
<2922> CONT.
significant loss in nitrite reductase activity, but no change in nitrate reductase activity or chlorophyll content
COMMENTS: Nitrite reductase--chloroplastic enzyme; nitrate reductase--cytoplasmic enzyme
REFERENCE: Leffler, H.R. and J.H. Cherry, "Destruction of Enzymatic Activities of Corn and Soybean Leaves Exposed to Ozone," Can. J. Bot. 52:1233-1238 (1974).

<2923>
CHEMICAL NAME: Ozone
CHEMICAL COMMON NAME: Ozone
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 50 and 100 pphm
APPLICATION METHODS: Fumigation for 1 hr using a plexiglass chamber system
EXPERIMENTAL CONDITIONS: Growth chamber--day/night temperature of 25/20 C, photoperiod 16 hr, relative humidity 70-75%; 10 cm plastic pots, sandy loam soil; 4 soil regimes - (1) optimum water, plants reduced soil to 14%, then watered back to field capacity (28%); (2) dry soil condition, soil water reduced to 6% then brought back to field capacity; (3) dry soil condition before ozone treatment; (4) dry soil condition after ozone treatment
EFFECTS: 3 leaf stage--ozone caused leaf injury and leaf and stem weight reduction to plants receiving optimum water, no effect on leaves of plants grown under dry soil conditions but plant weight increased, effects on plants in dry soil after fumigation and dry soil before fungigation similar to optimum water and dry soil plants respectively; plants at 5 or 7-leaf stage not as sensitive as 3 leaf stage; leaf injury reflected by reduction in chlorophyll
COMMENTS: Regardless of plant age, newly formed leaves more tolerant than older leaves; leaves of younger plants more sensitive to ozone than corresponding leaves of older plants; open stomata (when water is available) important factor in ozone phytotoxicity; plants under water stress more protected from ozone than plants with optimum water because of closed stomata
REFERENCE: Khatamian, H., N.O. Adedipe, and D.P. Ormrod, "Soil-Plant-Water Aspects of Ozone Phytotoxicity in Tomato Plants," Plant Soil 38:531-541 (1973).

<2924>
CHEMICAL NAME: Ozone
CHEMICAL COMMON NAME: Ozone
PLANT: Lily (LILIUM LONGIFLORUM)
EXPERIMENTAL DOSE: 0.28 and 2.09 ppm
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Fumigation chamber; incubation at 28 C
EFFECTS: Slight if any reduction in pollen tube length
COMMENTS: Marked inhibition of tube elongation occurred with two combinations of two gases and moderate inhibition occurred with three combinations of two gases; major atmospheric pollutants such as SO(2), NO(2), and O(3) may enhance each other's phytotoxicity; aldehydes may be synergistic in their effects on plants
REFERENCE: Masaru, N., F. Syozo, and K. Saburo, "Effects of Exposure to Various Injurious Gases on Germination of Lily Pollen," Environ. Pollut. 11(3):181-187 (1976).

<2925>
CHEMICAL NAME: Ozone
CHEMICAL COMMON NAME: Ozone
PLANT: Poinsettia (EUPHORBIA PULCHERRIMA)
EXPERIMENTAL DOSE: 25, 35, and 45 pphm (4 hr exposure)
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Greenhouse study; RH--75 to 80% temperature--20-25 C
EFFECTS: Foliar damage to 14 poinsettia varieties at 45 pphm with damage to one variety at lower concentrations
COMMENTS: No visible increase or decrease in disease incidence occurred as a result of being exposed to ozone for 4 hr at any level before incubation; foliar ozone injury observed in varying degrees on all cultivars exposed at 45 pphm ozone and on Eckespoint C-1 cultivar
REFERENCE: Manning, W.J., W.A. Feder, and L. Perkins, "Effects of BOTRYTIS and Ozone on Bracts and Flowers of Poinsettia Cultivars," Plant Dis. Rep. 56(9): 814-816 (1972).

<2926>
CHEMICAL NAME: Ozone
CHEMICAL COMMON NAME: Ozone
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 3, 5, 15, 22, and 30 pphm (3 hr exposure)
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--1:1 mixture of loam and vermiculite; pot culture; evaluation time--3 or 4 da
EFFECTS: After 3 hr exposure at 30 pphm, all varieties had surface damage on at least 50% of leaves
COMMENTS: Ozone and sulfur dioxide mixtures acted synergistically to inflict ozone-type symptoms on all Maryland cultivars; no injury resulted when plants fumigated singly for 4 hours with ozone at 3 to 3.5 pphm and sulfur dioxide at 45 to 50 pphm
REFERENCE: Menser, H.A., G.H. Hodges, and C.G. McKee, "Effects of Air Pollution on Maryland (Type 32) Tobacco," J. Environ. Quality 2(2):253-258 (1973).

<2927>
CHEMICAL NAME: Ozone
CHEMICAL COMMON NAME: Ozone
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 0.3 ppm
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--20 to 25 Ci RH--60 to 70%
EFFECTS: No apparent effect
COMMENTS: Apple trees relatively sensitive to SO(2) and insensitive to O(3); interaction of SO(2) and O(3) resulted in synergistic effect especially on shoot growth reduction (and in a synergistic effect especially on shoot growth reduction) and in producing greyish-green, water-soaked areas on mid-shoot leaves
REFERENCE: Kender, W.J. and F.H.F.G. Spierings, "Effects of Sulfur Dioxide, Ozone, and Their Interactions on Golden Delicious Applies," Neth. J. Pl. Path. 81:149-150 (1975).

<2928>
CHEMICAL NAME: PB
CHEMICAL COMMON NAME: PB
PLANT: Quackgrass (AGROPYRON REPENS); Broadleaf weeds
EXPERIMENTAL DOSE: 10, 20, and 30% aqueous solutions
APPLICATION METHODS: Treatment to 10 in. tall quackgrass
EXPERIMENTAL CONDITIONS: Greenhouse tests
EFFECTS: Four weeks after treatment, quackgrass normal but broadleaf weeds dead
COMMENTS: Selective herbicidal action; broadleaf weeds not identified
REFERENCE: Carlson, R.F. and J.F. Moulton, "Use of the Ammonium Salt of Trichloroacetate, the Sodium Salt of Trichloroacetate, Ammonium Thiocyanate, and Herbicide "PB", in the Eradication of Grasses, and the Effect of These Chemicals on Strawberry and Raspberry Plants," Mich. Agric. Exp. Stn. Q. Bull. 30:413-421(1948).

<2929>
CHEMICAL NAME: PENICILLIUM ISLANDICUM (Toxin A)
CHEMICAL COMMON NAME: Toxin A (PENICILLUM ISLANDICUM)
PLANT: Wheat (TRITICUM AESTIVUM); Corn (ZEA MAYS); Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1x10(-6) to 1x10(-3) M
APPLICATION METHODS: Solution soak (wheat coleoptile) or spray on intact plants
EXPERIMENTAL CONDITIONS: Laboratory study; wheat coleoptile sections--24 hr roller tube incubation; spray on intact bean and corn plants
EFFECTS: Inhibited growth of wheat coleoptile sections at 1x10(-3) M but had no effect on corn or bean
COMMENTS: Toxin A moderately inhibited growth of wheat coleoptiles but did not inhibit growth of week-old intact corn and bean plants; toxin B showed no plant-growth inhibition
REFERENCE: Cole, R.J., J.W. Kirksey, H.G. Cutler, D.M. Wilson, and G. Morgan-Jones, "Two Toxic Indole Alkaloids From PENICILLIUM ISLANDICUM," Can. J. Microbiol. 22(5):741-744 (1976).

<2930>
CHEMICAL NAME: Penoxalin
CHEMICAL COMMON NAME: Penoxalin
PLANT: Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA LUTESCENS); Foxtail, green (SETARIA VIRIDIS); Sunflower (HELIANTHUS ANNUUS); Velvetleaf (ABUTILON THEOPHRASTI); Venice mallow (HIBISCUS TRIONUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed (AMARANTHUS sp.); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 and 1.25 lb/A
APPLICATION METHODS: Preplanting incorporated treatments; 1.5 gal capacity plot sprayer regulated to apply 30 gal per acre
EXPERIMENTAL CONDITIONS: Test compound mixed with water to make 1 gal of spray solution; 3 replicates, randomized complete block design; 4 to 5 rows wide by 40 ft long; multiple test locations
EFFECTS: Grass control--82 and 88% at 1.25 and 1.5 lb/A, respectively; broadleaf weed control--63 and 84% at 1.25 and 1.5 lb/A, respectively, no soybean injury reported
COMMENTS: Foxtails--grasses; other weeds--broadleaf; combinations of herbicides also tested.
REFERENCE: Seim, A.L. and V.M. Jennings, "Soybean Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:54-58 (1975).

<2931>
CHEMICAL NAME: Penoxyn
CHEMICAL COMMON NAME: Penoxyn
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 2.0 kg/ha
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Effective control of weeds and moderate reduction in vigor of peanuts
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit futher testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<2932>
<2932>
CHEMICAL NAME: Pentadecane
CHEMICAL COMMON NAME: N-pentadecane
PLANT: Sunflower (HELIANTHUS ANNUUS); Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect
EFFECTS: No damage to leaf cells of sunflower or carrot.
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2933>
CHEMICAL NAME: Pentanamide, N(3-chloro-4-methylphenyl)-2-methyl-
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Eggplant (SOLANUM MELONGENA)
EXPERIMENTAL DOSE: 100 to 4800 ppm
APPLICATION METHODS: Foliar spray to run-off
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; evaluation time--up to 28 da
EFFECTS: At 2400 to 4800 ppm, death of both test species; grafting one plant to the other improved tolerance of both species considerably
COMMENTS: Tomato and eggplant increased in tolerance with age but tomato increased at much faster rate; two- to four-week-old tomato plants tolerated 10 times concentration tolerated by eggplants of same age
REFERENCE: Colby, S.R. and G.F. Warren, "Selectivity and Mode of Action of N-(3-chloro-4-methylphenyl)-2-methylpentanamide," Weeds 10(4):308-310 (1962).

<2934>
CHEMICAL NAME: Pentanamide, N(3-chloro-4-methylphenyl)-2-methyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<2935>
CHEMICAL NAME: Pentanamide, N-(3-chloro-4-methylphenyl)-2-methyl-
CHEMICAL COMMON NAME: Solan
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 5.0 and 10.0 ppmw
APPLICATION METHODS: Injected under surface of water by spray nozzle at 120 psi
EXPERIMENTAL CONDITIONS: Field study; naiads growing in 2 locations in FL; time period--1960 to 1962
EFFECTS: Slight control of naiad at 10 ppmw for 12 wk
COMMENTS: Most promising of 13 herbicides for control of southern naiad were acrolein, endothall, diquat, and paraquat; acrolein and endothall gave most rapid kill of southern naiad but retreatment necessary at end of 16 weeks
REFERENCE: Blackburn, R.D. and L.W. Weldon, "Control of Southern Naiad in Florida Drainage and Irrigation Channels," Weeds 12(4):295-298 (1964).

<2936>
CHEMICAL NAME: Pentanamide, N-(3-chloro-4-methylphenyl)-2-methyl-
CHEMICAL COMMON NAME: Solan
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Eggplant (SOLANUM MELONGENA)
EXPERIMENTAL DOSE: 75 to 4800 ppm
APPLICATION METHODS: Addition to nutrient solution (isolated chloroplasts); postemergence spray (greenhouse)
EXPERIMENTAL CONDITIONS: Laboratory study; isolated chloroplasts; chloroplast penetration determined by C(14)-labelled Solan; greenhouse study of intact plants
EFFECTS: At 600 to 2400 ppm, growth reduction of tomato; greater growth reduction of eggplant at 300 ppm and higher concentration levels; isolated chloroplasts of both species readily absorbed Solan (480 ppmw)
COMMENTS: Tomato plants possess degree of tolerance to postemergence applications of solan; eggplant highly susceptible; differences in penetration, persistence and metabolism of solan by tomato and eggplant sufficient to account for differential susceptibility
REFERENCE: Colby, S.R. and G.F. Warren, "Selective Action of Solan on Tomato and Eggplant," Weeds 13(3):257-263 (1965).

<2937>
CHEMICAL NAME: Pentanamide, N-(3-chloro-4-methylphenyl)-2-methyl-
CHEMICAL COMMON NAME: Pentanochlor
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 2, 4, and 8 lb/A
APPLICATION METHODS: Postemergence spray at volume rate of 352 l./ha and pressure of 2.1 kg/cm (2); 11.4% EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse study; sand grown; plants watered from above before treatment and from below after treatment; visual assessments and dry weight measurements
EFFECTS: 8 kg/ha caused marginal necrosis of older leaves within 2 weeks; chlorotic patches on sprayed leaf surfaces at all rates sometime later; no significant reduction in dry weight compared to control
REFERENCE: Clay, D.V., "The Response of Strawberry to a Range of Foliage Acting Herbicides," Proc. Brit. Weed Control Conf. 11:409-416 (1972).

<2938>
CHEMICAL NAME: Pentanamide, N-(3-chloro-4-methylphenyl)-2-methyl-
CHEMICAL COMMON NAME: Pentanochlor
PLANT: Spruce, sitka (PICEA SITCHENSIS)
EXPERIMENTAL DOSE: 1 and 2 kg/ha
APPLICATION METHODS: Postemergence, 21, 42, and 90 days after emergence, spray in 50 ml/sq m solution; preemergence spray in 50 ml/sq m solution
EXPERIMENTAL CONDITIONS: Herbicide screening trials; sandy loam soils; randomized block design; 1.0 x 1.0 m plot size; 3 year test
EFFECTS: Growth reduction at both rates; germination inhibition at 2 kg/ha
COMMENTS: Only postemergent treatment tested second year, no test the third year; weeds not present in sufficient quantity for testing until third year
REFERENCE: Brown, R.M., "Testing Various Herbicides, Including Diphenamid and Propham, for Weed Control in Seedbeds of Sitka Spruce (PICEA SITCHENSIS [Bong.] Carr.)," Brit. Weed Control Conf. 12:255-264 (1974).

<2939>
CHEMICAL NAME: Pentanamide, N-(3-chloro-4-methylphenyl)-2-methyl-
CHEMICAL COMMON NAME: Pentanochlor
PLANT: Gladiolus; Ragweed, common (AMBROSIA ELATIOR); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Bromegrass, downy (BROMUS TECTORUM); Crabgrass, large (DIGITARIA SANGUINALIS); Purslane, common (PORTULACA OLERACEA); Weeds
EXPERIMENTAL DOSE: 1 and 2 kg/ha
APPLICATION METHODS: Postemergence, 21, 42, and 90 days after emergence, spray in 50 ml/sq m solution; preemergence spray in 50 ml/sq m solution
EXPERIMENTAL CONDITIONS: Herbicide screening trials; sandy loam soils; randomized block design; 1.0 X 1.0 m plot size; 3 year test
EFFECTS: Growth reduction at both rates; germination inhibition at 2 kg/ha
COMMENTS: Only postemergent treatment tested second year; no test the third year; weeds not present in sufficient quantity for testing until third year
REFERENCE: Brown, R.M., "Testing Various Herbicides, Including Diphenamid and Propham, for Weed Control in Seedbeds of Sitka Spruce (PICEA SITCHENSIS [Bong.] Carr.)," Brit. Weed Control Conf. 12:255-264 (1974).

<2940>
CHEMICAL NAME: Pentanamide, N-(3,4-dichlorophenyl)-
CHEMICAL COMMON NAME: DCVA
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 500 micro M
APPLICATION METHODS: Addition to assay preparations of chloroplasts
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: Increased photochemical activity and chloroplast bleaching
COMMENTS: Dual wavelength spectrophotometry applied to observations of small spectral changes during biochemical reactions in intact tissue; based on principle that absorbance reading at wavelength of isobestic point of reaction fluctuates with time in same manner as reading at wavelength where an absorbance change due to reaction takes place
REFERENCE: Inoue, Y., Yaginuma, N., Ogawa, T., Konishi, K., and K. Shibata, "Spectral Changes of Chloroplasts as a Means to Examine Phytotoxic Effects of Herbicides," in Environmental Toxicology of Pesticides, F. Matsumura, G.M. Boush, and T. Misato (Eds.) Academic Press, New York and London, pp. 549-570 (1972).

<2941>
CHEMICAL NAME: Pentanamide, N-(3,4-dichlorophenyl)-2-methyl-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, 10(-4)M, and 10(-5)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Poor control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2942>
<2942>
CHEMICAL NAME: Pentanamide, N-(3,4-dichlorophenyl)-2-methyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<2943>
CHEMICAL NAME: Pentanamide, N-(3,4-dichlorophenyl)-2-methyl-
CHEMICAL COMMON NAME: Karsil
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Postplanting spray; 30 gal/A at 30 lb/sq in
EXPERIMENTAL CONDITIONS: Field study; soil--Stoy silt loam; application one week after planting in winter; time period--1961 and 1962
EFFECTS: No weed control
COMMENTS: Effective weed control, lasting until June of following year obtained with atrazine, CIPC, kloben, simazine, lorox, ametryne, and prometryne; atrazine, kloben and simazine gave nearly 100% control; atrazine caused plant injury with more dead plants in treated plots than in control planting; simazine and kloben safer materials
REFERENCE: Sherwood, L.V. and H.R. Kemmerer, "The Influence of Winter Applied Preemergence Herbicides on Weed Growth among Woody Ornamental Plants," Am. Soc. Hort. Sci. 85:657-662 (1964).

<2944>
CHEMICAL NAME: Pentanamide, 2-(dimethylamino)-N-[7-(1H-indol-3-ylmethyl)-3-(1-methylethyl)-5,8-dioxo-2-oxa-6,9-diazabicyclo[10.2.2]-hexadeca-10,12,14,15-tetraen-4-yl]-3-methyl-, [3R-[3R*,4S*(2S*,3R*),7S*]]-
CHEMICAL COMMON NAME: Discarine B
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 0 to 700 uM
APPLICATION METHODS: Isolated chloroplast exposed in solution
EXPERIMENTAL CONDITIONS: Chloroplasts isolated in 250 mM sucrose, 20 mM n-tris (hydroxymetyl)-methyl-2-amino ethanesulphonic acid)-NaOH buffer (pH 7.8) and 3 mM MgCl(2); effects on photophosphorylation studied
EFFECTS: Energy transfer inhibited--50% inhibition occurred at 55uM, 100% at approximately 400 uM
COMMENTS: Inhibition totally reversed by 10mM methylamine, a known photophosphorylation uncoupler; discarine B--peptide alkaloid obtained from DISCARIA LONGISPINA, an Argentinian plant
REFERENCE: Andreo, C.S. and R.H. Vallejos, "Inhibition of Energy Transfer Reactions in Spinach Chloroplasts by Discarine B, a New Peptide Alkaloid," FEBS Lett. 33:201-204 (1973).

<2945>
CHEMICAL NAME: Pentane, 2,2,4-trimethyl-
CHEMICAL COMMON NAME: Iso-octane
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) for bean at 297x10(-5)M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<2946>
CHEMICAL NAME: Pentanedioic acid, 2-oxo-
CHEMICAL COMMON NAME: Alpha ketoglutaric acid
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 3 x10 (-3)m
APPLICATION METHODS: Submersion of oat coleoptiles
EXPERIMENTAL CONDITIONS: Laboratory study; oat coleoptile assay--increased or inhibited growth of 3mm sections in solutions containing sucrose, IAA, and experimental compounds; coleoptile age--66-69 hr (and at other times)
EFFECTS: Inhibited growth of coleoptile sections age 72-76 hr but no effect at age 66-69 hr
COMMENTS: Most organic acids accelerated growth in absence of inhibitor but in presence of auxin and sucrose or auxin alone, inhibition of growth by low concentrations of iodoacetate and reversal of inhibition by certain organic acids; sensitivity of sections both to inhibitor and to growth promoting effect of the acids varied with age of the plants; lowest concentration causing definite inhibition steadily decreased with increasing age
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. I. The Action of Iodoacetate and Organic Acids on the AVENA Coleoptile," Am. J. Bot. 35:271-281 (1948).

<2947>
CHEMICAL NAME: Pentanoic acid
CHEMICAL COMMON NAME: Pentanoic acid
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: Slight damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2948>
CHEMICAL NAME: Pentaric acid, 3-carboxy-2,3-dideoxy-
CHEMICAL COMMON NAME: Isocitric acid
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 3x10(-3)M
APPLICATION METHODS: Submersion of oat coleoptiles
EXPERIMENTAL CONDITIONS: Laboratory study; oat coleoptile assay--increased or inhibited growth of 3mm sections in solutions containing sucrose, IAA, and experimental compounds; coleoptile age--66-69 hr (and at other times)
EFFECTS: Growth stimulation
COMMENTS: Most organic acids accelerated growth in absence of inhibitor but in presence of auxin and sucrose or auxin alone, inhibition of growth by low concentrations of iodoacetate and reversal of inhibition by certain organic acids; sensitivity of sections both to inhibitor and to growth promoting effect of the acids varied with age of the plants; lowest concentration causing definite inhibition steadily decreased with increasing age Pentaric acid, 3-carboxy-2,3-dideoxy- = Oat (AVENA SATIVA) & Growth stimulation
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. I. The Action of Iodoacetate and Organic Acids on the AVENA Coleoptile," Am. J. Bot. 35:271-281 (1948).

<2949>
CHEMICAL NAME: Pentene, 2,4,4-trimethyl-
CHEMICAL COMMON NAME: Diisobutylene
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) for bean at 106x10(-5)M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<2950>
CHEMICAL NAME: Peroxide, acetyl nitro
CHEMICAL COMMON NAME: PAN
PLANT: Orange, navel (BREVIPALPUS CALIFORNICUS)
EXPERIMENTAL DOSE: 0-12.0 ppb
APPLICATION METHODS: Ambient air pollution; PAN concentration manipulated by filtering air entering exposure chambers
EXPERIMENTAL CONDITIONS: Environmental chamber, greenhouse, and field studies; time period--1971 to 1973
EFFECTS: More leaves than normal lost with reduced number of new leaves and growth as determined by pruning
COMMENTS: Growth of young trees reduced by the addition of synthetic PAN at levels in ambient air; leaf drop increased; with enclosed branches, significantly less growth occurred with PAN; trends toward reduced yield of mature fruit
REFERENCE: Thompson, C.R. and G. Kats, "Effects of Ambient Concentrations of Peroxyacetyl Nitrate on Navel Orange Trees," Environ. Sci. Tech. 9(1):35-38 (1975).

<2951>
CHEMICAL NAME: Peroxide, acetyl nitro
CHEMICAL COMMON NAME: PAN
PLANT: Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 0.27 micro mole per minute per flask
APPLICATION METHODS: Flushing test flasks with PAN gas
EXPERIMENTAL CONDITIONS: Laboratory study; isolated chloroplasts
EFFECTS: Inhibited photophosphorylation
COMMENTS: Peroxyacetyl nitrate caused inhibition to photophosphorylation, in either dark or light, by affecting the chloroplast; suggests that peroxyacetyl nitrate could oxidize sulfhydryl groups on enzymes necessary for photophosphorylation
REFERENCE: Koukol, J., W.M. Dugger, and R.L. Palmer, "Inhibitory Effect of Peroxyacetyl Nitrate on Cyclic Photophosphorylation by Chloroplasts From Black Valentine Bean Leaves," Plant Physiol. 42:1419-1422 (1967).

<2952>
<2952>
CHEMICAL NAME: Peroxide, cetylhydro-
CHEMICAL COMMON NAME: Cetylhydroperoxide
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: No damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<2953>
CHEMICAL NAME: Petkolin-A
CHEMICAL COMMON NAME: Petkolin-A
PLANT: Wheat (TRITICUM AESTIVUM); Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Tomato (LYCOPERSICON ESCULENTUM); Sugarcane (SACCHARUM OFFICINARUM); Peanut (ARACHIS HYPOGAEA); Beet, sugar (BETA VULGARIS); Turnip (BRASSICA NAPUS); Bean (PHASEOLUS RADIATIS); Cabbage (BRASSICA OLERACEA); Bean, hyacinth (DOLICHOS IAB LAB); Pumpkin (CUCURBITA MAXIMA); Goard, smooth (LUFFA AEGYPTIACA); Sesame (SESAMUM INDICUM); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 3.0%
APPLICATION METHODS: Two postemergence spray treatments--at one month old and when fully mature
EXPERIMENTAL CONDITIONS: Greenhouse and plot grown plants; plots 10x10 sq ft; visual observations
EFFECTS: Normal growth, no effects
REFERENCE: Ashrafi, S.H., I.A. Khan, and M. Tasnif, "Toxicity of Petkolin-M to Plants," Sci. Res. 5(4):163-170 (1968).

<2954>
CHEMICAL NAME: Petkolin-M
CHEMICAL COMMON NAME: Petkolin-M
PLANT: Wheat (TRITICUM AESTIVUM); Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Tomato (LYCOPERSICON ESCULENTUM); Sugarcane (SACCHARUM OFFICINARUM); Peanut (ARACHIS HYPOGAEA); Beet, sugar (BETA VULGARIS); Turnip (BRASSICA NAPUS); Bean (PHASEOLUS RADIATIS); Cabbage (BRASSICA OLERACEA); Bean, hyacinth (DOLICHOS IAB LAB); Pumpkin (CUCURBITA MAXIMA); Goard, smooth (LUFFA AEGYPTIACA); Sesame (SESAMUM INDICUM); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1 to 3% solutions
APPLICATION METHODS: Test 1--plants sprayed twice, when one month old and when fully mature; test 2--soil treatment; test 3--seed treatments; test 4--plants grown in culture solution, treated with insecticide when mature enough
EXPERIMENTAL CONDITIONS: Test 1--greenhouse and 10x10 sq ft plot studies; test 2--effect on root growth studied; test 3--seeds soaked in 1 to 3% solution for 24 hr then germinated; test 4--plants grown in culture in 1.5 l. glass containers, root injuries observed
EFFECTS: Normal growth in all tests
COMMENTS: Comparisons with other insecticides for phytotoxicity
REFERENCE: Ashrafi, S.H., I.A. Khan, and M. Tasnif, "Toxicity of Petkolin-M to Plants," Sci. Res. 5(4):163-170 (1968).

<2955>
CHEMICAL NAME: Petkolin-S
CHEMICAL COMMON NAME: Petkolin-S
PLANT: Wheat (TRITICUM AESTIVUM); Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Tomato (LYCOPERSICON ESCULENTUM); Sugarcane (SACCHARUM OFFICINARUM); Peanut (ARACHIS HYPOGAEA); Beet, sugar (BETA VULGARIS); Turnip (BRASSICA NAPUS); Bean (PHASEOLUS RADIATIS); Cabbage (BRASSICA OLERACEA); Bean, hyacinth (DOLICHOS IAB LAB); Pumpkin (CUCURBITA MAXIMA); Goard, smooth (LUFFA AEGYPTIACA); Sesame (SESAMUM INDICUM); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 3.0%
APPLICATION METHODS: Two postemergence spray treatments--at one month old and when fully mature
EXPERIMENTAL CONDITIONS: Greenhouse and plot grown plants; plots 10x10 sq ft; visual observations
EFFECTS: Normal growth, no effects
REFERENCE: Ashrafi, S.H., I.A. Khan, and M. Tasnif, "Toxicity of Petkolin-M to Plants," Sci. Res. 5(4):163-170 (1968).

<2956>
CHEMICAL NAME: Phenanthridinium, 3,8-diamino-5-ethyl-6-phenyl-, bromide
CHEMICAL COMMON NAME: Ethidium bromide
PLANT: Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 100 micro g/ml
APPLICATION METHODS: Immersion of roots with bulbs for 1, 3, 6, and 12 hr
EXPERIMENTAL CONDITIONS: Laboratory study; plants grown in dark, root meristem studied
EFFECTS: Inhibition of mitochondrial translation and increased protein materials in mitochondrial matrix
COMMENTS: Growth and mitochondrial division between the 6th and 12th hours seemed to occur; appearance of

<2956> CONT.
electron-opaque structures in mitochondrial matrix also planimetrically quantified, as well as appearance of some electron-transparent areas
REFERENCE: Risueno, M.C., C. de la Torre, and G. Gimenez-Martin, "Cytochemical and Quantitative study of the Structural Changes Induced by Ethidium Bromide in Plant Mitochondria," Jour. Ultrstruc. Res. 51:204-217 (1975).

<2957>
CHEMICAL NAME: Phenol
PLANT: Rye (SECALE CEREALE); Wheat, durum (TRITICUM DURUM); Wheat, diploid (TRITICUM MONOCOCCUM); Wheat (TRITICUM AESTIVUM); Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 0.2 to 5.0 g/l.
APPLICATION METHODS: Seed treatment with 10 ml test solution
EXPERIMENTAL CONDITIONS: Seeds placed in petri dishes containing 10 ml test solution; dishes covered at room temperature for 4 days then germinated seeds counted; mortality compared to control reported; ploidy versus toxic effects monitored
EFFECTS: 60 and 21% mortality in diploid and tetraploid wheat respectively at 2 g/l.; 30, 97, and 15% mortality in diploid, tetraploid, and hexaploid wheat respectively at 2 g/l.; 95, 70, and 75% mortality in diploid, triploid, and tetraploid beets respectively at 5 g/l.
COMMENTS: T. MONOCOCCUM, diploid wheat; T. DURUM, tetraploid wheat; T. AESTIVUM, hexaploid wheat; in general, increase in ploidy accompanied by increased resistance toward cytotoxicity
REFERENCE: Badilescu, I., S. Botis-Simon, and Z. Simon, "Response of Some Seeds of Different Ploidies Towards Alkylating Agents and Some Common Phytotoxica," Rev. Roum. Biochim. 4(4):279-285 (1967).

<2958>
CHEMICAL NAME: Phenol, benzyltetrachloro-
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 125 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: Toxicity rating of 4
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<2959>
CHEMICAL NAME: Phenol, dinitro-
CHEMICAL COMMON NAME: DNP
PLANT: Spinach (SPINACIA OLERACEA); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 5X10(-5) and 5X10(-4)M
APPLICATION METHODS: Solution addition
EXPERIMENTAL CONDITIONS: Laboratory study; spinach leaf microsome system; wheat and barley seed germination in petri plates
EFFECTS: At one of the concentrations, reduced phosphate incorporation into glycerides; reduced growth, and reduced polar lipids
COMMENTS: Dinoseb and MBR 8251 inhibited enzymic synthesis of glycerides IN VITRO; physiological significance confirmed in intact wheat seedlings; dinoseb and MBR 8251 inhibition of glyceride synthesis IN VIVO evidenced by buildup in free fatty acids and decrease in neutral and polar lipids
REFERENCE: St. John, J.B. and J.L. Hilton, "Lipid Metabolism as a Site of Herbicide Action," Weed Sci. 21(5):477-480 (1973).

<2960>
CHEMICAL NAME: Phenol, dinitro-
CHEMICAL COMMON NAME: DNP
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 0.25 mM
APPLICATION METHODS: Solution soak of leaf tissue from etiolated seedlings
EXPERIMENTAL CONDITIONS: Laboratory study; red light pretreatment
EFFECTS: Reduced chlorophyll formation
COMMENTS: When DNP administered 4 hr after red-light treatment, chlorophyll synthesis was much higher; plants infiltrated with DNP immediately before or after the red-light pretreatment still displayed net effect of red stimulus, but showed 50% reduced chlorophyll values compared with red-treated plants
REFERENCE: DeGreef, J.A. and J.P. Verbelen, "DNP-Inhibition of Phytochrome-Induced Greening Processes," Reunion Gembloux 81(4):797 (1973).

<2961>
CHEMICAL NAME: Phenol, methylenebis [chloro-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse phytotoxic effect
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-;

<2961>
<2961> CONT.
2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<2962>
CHEMICAL NAME: Phenol, pentachloro-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 43.5, 87, and 174 mg/l.
EXPERIMENTAL CONDITIONS: Lateral roots used; mitotic index of control, 98
EFFECTS: Percentage of abnormal mitotic cells--6.0, 4.33, and 2.33% at 174, 87, and 43.5 mg/l. respectively; mitotic index--39, 61, and 77 at 174, 87, and 43.5 mg/l., respectively
COMMENTS: Induced types of abnormalities--(1) disturbed type (disturbed metaphases, prophase-metaphases and disturbed ana-telophases) (2) lagging chromosomes, (3) stickiness, (4) fragmentation, and (5) cytomixis; tables in paper indicate percentages of each
REFERENCE: Amer, S.M. and E.M. Ali, "Cytological Effects of Pesticides IV. Mitotic Effects of Some Phenols," Cytologia 34:533-540 (1969).

<2963>
CHEMICAL NAME: Phenol, pentachloro-
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 62.5 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: Toxicity rating of 4
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<2964>
CHEMICAL NAME: Phenol, pentachloro-
CHEMICAL COMMON NAME: PCP
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 500 micro M
APPLICATION METHODS: Addition to assay preparations of chloroplasts
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: Increased photochemical activity and chloroplast bleaching
COMMENTS: Dual wavelength spectrophotometry applied to observations of small spectral changes during biochemical reactions in intact tissue; based on principle that absorbance reading at wavelength of isobestic point of reaction fluctuates with time in same manner as reading at wavelength where an absorbance change due to reaction takes place
REFERENCE: Inoue, Y., Yaginuma, N., Ogawa, T., Konishi, K., and K. Shibata, "Spectral Changes of Chloroplasts as a Means to Examine Phytotoxic Effects of Herbicides," in Environmental Toxicology of Pesticides, F. Matsumura, G.M. Boush, and T. Misato (Eds.) Academic Press, New York and London, pp. 549-570 (1972).

<2965>
CHEMICAL NAME: Phenol, pentachloro-
CHEMICAL COMMON NAME: PCP
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: Slight initial control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<2966>
CHEMICAL NAME: Phenol, pentachloro-
CHEMICAL COMMON NAME: PCP
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6)M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimal lethal concentration 4.80 to 3.86 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<2967>
CHEMICAL NAME: Phenol, pentachloro-, sodium salt
PLANT: Crabgrass (DIGITARIA sp.); Grasses; Jimsomweed (DATURA STRAMONIUM); Pigweed (AMARANTHUS sp.); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Lamb's-quarters (CHENOPODIUM ALBUM); Sida, spiny (SIDA SPINOSA); Broadleaf weeds; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 15, 20, 30, and 40 lb/A
APPLICATION METHODS: Preemergence spray of 15 and 20 lb and granular application at all rates
EXPERIMENTAL CONDITIONS: Dundee silty clay loam; weeds seeded prior to soybean planting; 8 in. by 6 ft sample areas within test plots
EFFECTS: Crabgrass--best control at 30 lb granular; grasses--best control at 15 lb spray and 40 lb granular; jimsonweed--best control at 30 lb granular; pigweed--best control at 20 lb spray and 30 lb granular; smartweed--best control at 20 lb spray and 30 and 40 lb granular; lambsquarter--best control at 20 lb spray and 40 lb granular; prickly sida--best control at 15 lb spray and 30 lb granular; broadleaved weeds--best control at 40 lb granular; soybean--no apparent effects
COMMENTS: 20 to 30 lb/A caused little or no soybean injury and showed good grass and broadleaf weed control activity
REFERENCE: Southwick, L. and R.G. Hanson, "Weedbeeds Herbicide - A New Formulation of Sodium Pentachlorophenate for Pre-emergence Weed Control in Soybeans," Down Earth 17(4):6-8 (1962).

<2968>
CHEMICAL NAME: Phenol, pentachloro-, sodium salt
CHEMICAL COMMON NAME: Dowicide G
PLANT: Spinach (SPINACIA OLERACEA); Plants
EXPERIMENTAL DOSE: 20 and 30 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; single and double spinach seeding rates and normal and delayed times
EFFECTS: Effective weed control but severely reduced spinach yield
COMMENTS: No chemical increased yield of spinach; two chemicals in normal seeding plots and 5 chemicals in delayed seeding plots gave as good yield as untreated and significant increase in weed control
REFERENCE: Noll, C.J. and M.L. Odland, "Pre-Emergence Weeding of Spinach With Chemical Herbicides," Proc. N.E. Weed Cont. Conf. 5:115-117 (1951).

<2969>
CHEMICAL NAME: Phenol, pentachloro-, sodium salt
CHEMICAL COMMON NAME: Sodium PCP
PLANT: Pine, Scots (PINUS SYLVESTRIS); Spruce, sitka (PICEA SITCHENSIS); Larch, Japanese (LARIX sp.)
EXPERIMENTAL DOSE: 0.5, 1.0, and 2.0%
APPLICATION METHODS: Treatment when most seedlings in young true leaf stage; spray at 100 gpa
EXPERIMENTAL CONDITIONS: Pot studies; spraying performed in greenhouse but pots placed outside for test; watering when necessary; acute and chronic toxicity assessed; weed control not studied
EFFECTS: 100% kill of all species at 2.0% and 100% kill of larch at all concentrations; some spruce and pine killed at lower concentrations
REFERENCE: Srivastava, T.N., "The Applications of Selective Herbicides to Forestry Practice," Indian For. 77:176-191 (1951).

<2970>
CHEMICAL NAME: Phenol, 1,1-cyclohexane-4,4'-bis[2,6-dichloro-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse effect on peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<2971>
CHEMICAL NAME: Phenol, 2-(1-methylethoxy)-, methylcarbamate
CHEMICAL COMMON NAME: Propoxur
PLANT: Spangletop, bearded, (LEPTOCHLOA FASCICULARIS)
EXPERIMENTAL DOSE: 2.5 to 33.6 kg/ha
APPLICATION METHODS: Preplant incorporated (3 to 4 cm depth) by subsurface insecticide applicator; 15% G formulation
EXPERIMENTAL CONDITIONS: Field study; rutabagas harvested after 60 days at 30-day intervals thereafter; whole, sliced, and peelings used to evaluate insecticide persistence with first instar maggots of HYLEMA BRASSICAE
EFFECTS: Undefined phytotoxic effect on rutabagas at higher application rates
COMMENTS: At high rates, phytotoxicity recorded for all compounds except trichloronat and fonofos; phytotoxicity so severe with AC64475 that all plants destroyed with rates in excess of 11.2 kg/acre
REFERENCE: Read, D.C., "Toxicity of Carbamate and Organophosphorus Insecticide Residues Absorbed by Rutabagas Grown in Treated Soil," Can. Entmol. 106(7):1319-1325 (1974).

<2972>
<2972>
CHEMICAL NAME: Phenol, 2-(1-methylethoxy)-, methylcarbamate
CHEMICAL COMMON NAME: Propoxur
PLANT: Bean, bush (PHASEOLUS HUMILIS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 4.4 lb/A
APPLICATION METHODS: Above seed furrow
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; Honeoye silt loam; June 6 planting
EFFECTS: Leaf burn
COMMENTS: Main study emphasis was seedcorn maggot control
REFERENCE: Eckenrode, C.J., N.L. Gauthier, D. Danielson, and D.R. Webb, "Seedcorn Maggot: Seed Treatments and Granule Furrow Applications for Protecting Beans and Corn," J. Econ. Entomol. 66(5):1191-1194 (1973).

<2973>
CHEMICAL NAME: Phenol, 2-(1-methylethoxy)-, methylcarbamate
CHEMICAL COMMON NAME: Baygon
PLANT: Carissa (CARISSA GRANDIFLORA); Loquat (ERIOBUTRYA JAPONICA); Euonymous (EUONYMOUS JAPONICUS); Juniper (JUNIPERUS CHINENSIS); Privet (LIGUSTRUM JAPONICUM); Palm, date (PHOENIX CANARIENSIS); Pittosporum (PITTOSPORUM TOBIRO); Podocarpus (PODOCARPUS MACROPHYLLA); Azalea (RHODODENDRON INDICUM); Palm, cabbage (SABAL PALMETTO); Viburnum (VIBURNUM SUSPENSUM)
EXPERIMENTAL DOSE: 1.0 and 4.0 lb/A; 70% WP; sticker-spreader (Plyac)
APPLICATION METHODS: Postemergence spray to run-off; 3X applications at weekly intervals
EXPERIMENTAL CONDITIONS: Greenhouse study; temperatures--80 to 85 F (day) and 62 to 68 F (night); RH--60 to 95%; evaluation time--1 wk
EFFECTS: Moderate to severe damage of loquat, pittosporum, and azalea mostly at 4X (4.0 lb/A) application rate with slight to moderate damage of euonymus, privet, and podocarpus; no injury of remaining plants
COMMENTS: Almost one-half plants exhibited some phytotoxic response; most sensitive plants were schefflera, fluffy ruffle fern, peperomia, and golden pothos; most toxic chemicals were plictran and omite and least phytotoxic materials were zectran and pirimor
REFERENCE: Short, D.E. and D.B. McConnell, "Pesticide Phytotoxicity to Ornamental Plants," Proc. Fla. St. Hort. Soc. 86:439-442 (1974).

<2974>
CHEMICAL NAME: Phenol, 2-(1-methylethoxy)-, methylcarbamate
CHEMICAL COMMON NAME: Aprocarb
PLANT: Clover, sweet (MELILOTUS sp.); Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 5, 50 and 500 ppm
APPLICATION METHODS: Powder prepared from granular formulation
EXPERIMENTAL CONDITIONS: Plants grown in disposable plastic pouches in 25 ml Bryan's solution; 10 pouches for each concentration and for control; 5 seeds per pouch, grown under 1 amp with 12 hr photoperiod; after germination one ml of 1:5 (w/v) nitragin AB added as inoculom; average dry weight determined after 30 days
EFFECTS: Alfalfa--growth inhibition at 50 and 500 ppm, 84% at 500 ppm, growth promoted at 5 ppm; sweetclover--inhibition at all rates, 82% at 500 ppm
REFERENCE: Lin, S-C., B.R. Funke, and J.T. Schulz, "Effects of Some Organophosphate and Carbamate Insecticides on Nitrification and Legume Growth," Plant Soil 37:489-496 (1972).

<2975>
CHEMICAL NAME: Phenol, 2-(1-methylethoxy)-, methylcarbamate
CHEMICAL COMMON NAME: Propoxur
PLANT: Corn (ZEA MAYS); Rice (ORYZA SATIVA); Sorghum, grain (SORGHUM BICOLOR); Oat (AVENA SATIVA); Goosegrass (ELEUSINE INDICA); Triticum (TRITICUM sp.); Rye (SECALE CEREALE); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.0 to 64.0 oz/100 lb (seed); sticker added; 75% WP
APPLICATION METHODS: Added to seed contained in jars
EXPERIMENTAL CONDITIONS: Laboratory study--seed germination at 72 to 76 F; field study--germination after planting
EFFECTS: Only one oat variety and corn germination unaffected; germination of at least one variety of crop seed was affected by concentrations as low as 4 oz/100 lb seed
COMMENTS: Differences in varietal susceptibility to propoxur evident; about 16 oz of propoxur/100 lb of oat seed the most that can be used with reasonable safety
REFERENCE: Ruppel, R.F., "Effect of Seed Treatment with Carbofuran and Propoxur on Germination of Small Grains," J. Econ. Ent. 64(6):1554-1556 (1971).

<2976>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Soybean (GLYCINE MAX); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 2.52 kg/ha
APPLICATION METHODS: Soil incorporated by rototiller; injection; postemergence spray; 188 to 282 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil -- Cecil sandy loam; herbicides studied either 2 or 3 years; combinations of herbicides evaluated also
EFFECTS: Moderate to effective control of weeds with slight damage to soybean in postemergence spray
COMMENTS: Vernolate injected into sandy loam soil controlled higher percentage of early weeds in soybeans in 2 years out of 3 when compared with incorporated vernolate at same rate by conventional methods; late season weed control was enhanced by split applications of herbicides applied postemergence in sequence with vernolate; chloroxuron applied early postemergence plus linuron or prometryne applied in split applications as late and layby treatments gave the best weed control
REFERENCE: Johnson, B.J., "Response of Weeds and Soy Beans to Vernolate and Other Herbicides," Weed Sci. 19(4):372-377 (1971).

<2977>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Beggarweed, Florida (DESMODIUM TORTUOSUM);Crabgrass, large (DIGITARIA SANGUINALIS);Peanut (ARACHIS HYPOGAEA);Alyceclover (ALYSICARPUS VAGINALIS);Sicklepod (CASSIA OBTUSIFOLIA); Poor joe;Pusley, Florida (RICHARDIA SCABRA)
EXPERIMENTAL DOSE: 0.75, 1.5, 1.75, and 3.0 lb/A
APPLICATION METHODS: Preplant spray; 13 to 38 gal/A.; postemergence spray; 30 psi
EXPERIMENTAL CONDITIONS: Field study; locations in 5 states (AL, FL, GA, NC, and VA); time period--1971 and 1972; evaluation times--varied, up to 161 days
EFFECTS: Moderate to effective control of beggarweed and fall panicum and only slight control of remaining weeds with slight damage to peanut in postemergence applications
COMMENTS: Alachlor/dinoseb applied postemergence over vernolate improved control of Florida beggarweed, sicklepod, fall panicum and crabgrass, and over benefin improved control of Florida beggarweed, sicklepod, and yellow nutsedge; alachlor/dinoseb applied postemergence provided fair to good Florida beggarweed control.
REFERENCE: Andrews, O.N., F.D. Timmons, W.L. Currey, and G.A. Buchanan, "An Evaluation of Alachlor and Dinoseb Applied Postemergence in Peanuts," Proc. South. Weed Sci. Soc. 26:106-118 (1973).

<2978>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 3.0 and 5.0 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha; 3% WS formulation
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Applied at cracking, dinoseb was effective in killing weeds without crop injury
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<2979>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Panicum, fall (PANICUM DICHOTOMIFLORUM); Grasses; Broadleaf weeds; Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam; time period--1975 and 1976
EFFECTS: Effective control of broadleafs and no control of grasses with reduced alfalfa yield
COMMENTS: Dinoseb, metolachlor, and methazole significantly thinned out alfalfa seedings; benefin, EPTC, profluralin, and butralin were outstanding treatments in grassy weed control; Vel 5052 did good job in controlling fall panicum and other grassy weeds but poor in broadleaf weed control
REFERENCE: Vengris, J. "Annual Weed Control in Alfalfa New Seedlings," Proc. Northeast. Weed Sci. Soc. 31:99-103 (1977).

<2980>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Spinach (SPINACIA OLERACEA); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 5X10(-5) and 5X10(-4)M
APPLICATION METHODS: Solution addition
EXPERIMENTAL CONDITIONS: Laboratory study; spinach leaf microsome system; wheat and barley seed germination in petri plates
EFFECTS: At one of the concentrations, reduced phosphate incorporation into glycerides; reduced growth, and reduced polar lipids
COMMENTS: Dinoseb and MBR 8251 inhibited enzymic synthesis of glycerides IN VITRO; physiological significance confirmed in intact wheat seedlings; dinoseb and MBR 8251 inhibition of glyceride synthesis IN VIVO evidenced by buildup in free fatty acids and decrease in neutral and polar lipids
REFERENCE: St. John, J.B. and J.L. Hilton, "Lipid Metabolism as a Site of Herbicide Action," Weed Sci. 21(5):477-480 (1973).

<2981>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, large (DIGITARIA SANGUINALIS); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 3.36 kg/ha
APPLICATION METHODS: Preemergence spray; 500 l./ha; EC formulation
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras sandy loam; pH--5.5; time period--1972 and 1973
EFFECTS: Slight to moderate control of weeds with slight initial injury to snap bean but no significant adverse effect on yield
COMMENTS: Preemergence applications of fluorodiphen, alachlor, and alachlor with dinoseb effected good

<2981>
<2981> CONT.
control of fall panicum, large crabgrass, and redroot pigweed in snap beans; combination of alachlor with dinoseb provided good control of lambsquarters; snap bean injury resulted from both fluorodiphen and alachlor and was influenced by preemergence rainfall
REFERENCE: Wilson, H.P., J.W. Belote, and T.E. Hines, "Activities of Alachlor and Fluorodiphen in Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:161-166 (1974).

<2982>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Nutsedge (CYPERUS sp.); Junglerice (ECHINOCHLOA COLONUM); Goosegrass (ELEUSINE INDICA); Pigweed, spiny (AMARANTHUS SPINOSUS); Purslane, common (PORTULACA OLERACEA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3.0 to 6.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 4% EC Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravely silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of all weeds except nutsedge (no control) with severe corn damage
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<2983>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Pigweed (AMARANTHUS sp.); Pigweed, spiny (AMARANTHUS SPINOSUS); Jimsomweed (DATURA STRAMONIUM); Purslane, common (PORTULACA OLERACEA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 6.0 and 9.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 3% EC Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective weed control with slight phytotoxicity to corn
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<2984>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 38 gal/A at 20 psi; 3% EC Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate weed control with no adverse effect on potato yield
COMMENTS: Metribuzin alone or in combination with other materials very effective in controlling barnyard grass and lady's thumb; other chemicals also effective in maintaing commercially acceptable weed control throughout season
REFERENCE: Sanok, W.J. and L.E. Weber, "Evaluation of Potato Herbicides on Long Island 1974," Proc. Northeast. Weed Sci. Soc. 29:316-318 (1975).

<2985>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Pigweed, smooth (AMARANTHUS HYBRIDUS); Amaranth, palmer (AMARANTHUS PALMERI); Pigweed, tumble (AMARANTHUS ALBUS); Amaranth, spiny (AMARANTHUS SPINOSUS)
EXPERIMENTAL DOSE: 1.5 and 3 lb/A
APPLICATION METHODS: Postemergence applications
EXPERIMENTAL CONDITIONS: Field study; applications made when plants 3 to 6 inches tall; observations made 13 days after treatment
EFFECTS: 1.5 lb/A rate more effective; 30% control of all but redroot (40%) and tumble (50%) pigweed; little control at 3 lb/A
COMMENTS: Little variation in pigweed susceptibility to preplant and preemergence herbicides tested, (no specific data given); differences in pigweed susceptibility noted using postemergence herbicides
REFERENCE: Santelmann, P.W. and L. Evetts, "Germination and Herbicide Susceptibility of Six Pigweed Species," Weed Sci. 19(1):51-54 (1971).

<2986>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Castorbean, volunteer (RICINUS COMMUNIS); Cotton (GOSSYPIUM HIRSUTUM); Sorghum, grain (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Postemergence spray; 188 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; time period--1968 to 1970
EFFECTS: Moderate control of volunteer castorbean with no adverse effect on crops
COMMENTS: Volunteer castorbean most effectively controlled by preemergence application of propazine in grain sorghum and by fluometuron in cotton; preplant applications of propazine not as effective as preemergence treatments.
REFERENCE: Smith, D.T., A.W. Cooley, D.O. Mooney, and A.F. Wiese, "Herbicidal Control of Volunteer Castorbean," Weed Sci. 20(4):338-340 (1972).

<2987>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Bursage, wollyleaf (FRANSERIA TOMENTOSA)
EXPERIMENTAL DOSE: 3.4 kg/ha
APPLICATION METHODS: Soil sterilant application with and without incorporation; postemergence sprays at varied stages of plant development; liquid sprays at 188 l/ha; pellets or granules broadcast by hand; surfactant added
EXPERIMENTAL CONDITIONS: Field study; non-crop areas; time period--1962 to 1968; evaluation time--up to 3 yr; soil--clay loam
EFFECTS: Little or no control of bursage
COMMENTS: Fenac controlled woollyleaf bursage for 3 years in noncropped areas; effective control of woollyleaf bursage obtained when treated at bud stage or earlier with ester formulation of 2,4-D
REFERENCE: Smith, D.T., A.F. Wiese, and A.W. Cooley, "Woollyleaf Bursage Response to Selected Herbicides," Weed Sci. 20(6):554-556 (1972).

<2988>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 1.68 kg/ha
APPLICATION METHODS: Postemergence (early and late) spray; 188 l./ha (early) and 235 l./ha (late, directed spray); X-77 surfactant (0.5%)
EXPERIMENTAL CONDITIONS: Field study; soil-Cecil sandy clay loam; time period--1969 to 1971
EFFECTS: Effective control of grasses with moderate control of broadleaf weeds and no adverse effect on sunflower
COMMENTS: Excellent grass control and poor broadleaf weed control obtained from early postemergence treatments of BP 17623 when applied as over-the-top spray at either cotyledon or first-leaf stage of sunflower growth, weed control results similar to BP 17623 from several herbicides applied as late-directed postemergence sprays; early postemergence treatments with BP 17623 caused some early injury to sunflower plants and reduction in achene oil percent when compared with achenes from untreated plants, but achene yields not reduced
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Postemergence on Weeds and Sunflowers," Crop Sci. 12(1):695-697 (1972).

<2989>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Cocklebur, common (XANTHIUM PENSYLVANICUM); Jimsomweed (DATURA STRAMONIUM); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 and 2.0 qt/A
APPLICATION METHODS: Postemergence spray; 10 or 25 gal/A at 60 or 30 psi; used in combination with alachlor at 2.0 qt/A for grass control
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of cocklebur and effective control of jimsonweed with slight initial injury of soybean but no adverse effect on yield at 1.0 qt/A
COMMENTS: Any of four herbicides tested provided excellent control and result in favorable net return if used early in cropping season; later applications, although better than no treatments, resulted in considerably lower net return
REFERENCE: Coble, H. D., "Optimizing Broadleaf Weed Control in Soybeans With Postemergence Herbicide," Down Earth 32(4):12-15 (1977).

<2990>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Couchgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Moderate control of shoot growth at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch, pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<2991>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Soybean (GLYCINE MAX); Sesbania, hemp (SESBANIA EXALTATA); Mexicanweed (CAPERONIA CASTANAEFOLIA); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Dayflower, common (COMMELINA COMMUNIS)
EXPERIMENTAL DOSE: 1.68 kg/ha
APPLICATION METHODS: Postemergence spray; 2.0 m swath; 0.5% X-77 surfactant
EXPERIMENTAL CONDITIONS: Field study; soil--heavy clay; evaluation time--2 or 6 wk
EFFECTS: Slight damage to soybean with slight to moderate control of weeds
COMMENTS: As postemergence treatments, bentazon plus surfactant applied topically and linuron plus surfactant or metribuzin plus surfactant directed gave good to excellent control of dayflower, hemp sesbania was controlled by treatments containing linuron, metribuzin or prometryne, all plus surfactant and directed; mexicanweed was controlled by directed applications of treatments containing linuron, metribuzin,

<2991>
<2991> CONT.
prometryne or 2,4-DB, all plus surfactant; good control of morningglory was obtained with directed applications of treatments containing 2,4-DB, dinoseb + naptalam plus surfactant, or prometryne plus surfactant
REFERENCE: Eastin, E.F., "Control of Problem Weeds in Texas Soybeans," Proc. South. Weed Sci. Soc. 26:67-73 (1973).

<2992>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 3.0 lb/A; 3% EC
APPLICATION METHODS: Preemergence spray; combined herbicides and types of application
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7
EFFECTS: Effective control of ragweed and lambsquarters, moderate control of pigweed, and no effect on crabgrass with slight damage to squash and no damage to cucumber
COMMENTS: Control of crabgrass, pigweed, ragweed and lambsquarters in seeded cucumbers and squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence, and preemergence applications of chloramben methyl ester alone; in cucumbers only, bensulide preplant incorporatd + chloramben methyl ester preemergence, bensulide preplant incorporated + dinoseb preemergence over activated charcoal, and nitralin preemergence gave excellent full-season weed control
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<2993>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Sorghum (SORGHUM BICOLOR); Bean, kidney (PHASEOLUS VULGARIS); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.01, 0.02, 0.03, 0.04, 0.06, and 0.08 kg/ha
APPLICATION METHODS: Postemergence spray; 75 l./ha; undiluted, non-phytotoxic isoparaffinic oil carrier
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; photoperiod--16 hr; temperatures--23 to 27 C
EFFECTS: Minor growth reduction of all species
REFERENCE: Jordan, T.N. and G.F. Warren, "Effects of Prometryn and Dinoseb Combinations in an Undiluted Oil Carrier," Weed Sci. 23(4):328-332 (1975).

<2994>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Bahiagrass (PASPALUM NOTATUM)
EXPERIMENTAL DOSE: 10.0 lb/A
APPLICATION METHODS: Postemergence spray; 37-50 gal/A
EXPERIMENTAL CONDITIONS: Field study; 3 locations (FL); time period--1971 and 1972; evaluation time--8 to 26 wks
EFFECTS: Slight control of bahiagrass
COMMENTS: Combinations of diuron or simazine plus 2 applications of dalapon, 2 applications of dalapon alone or single applications of glyphosate provided best grass control; in addition, bahiagrass controlled with oxadiazon and asulam
REFERENCE: Arnold, C.E. and J.B. Aitken, "Perennial Grass Control in Pecan Orchards," Proc. South. Weed Sci. Soc. 26:231-235 (1973).

<2995>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat, and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in sorghum, oat, and cucumber at 1 and 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<2996>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Weeds; Pine, loblolly (PINUS TAEDA)
EXPERIMENTAL DOSE: 4.5 lb/A
APPLICATION METHODS: Preemergence, sprayed over newly planted pine seedlings at 40 psi and 20 gpa
EXPERIMENTAL CONDITIONS: Field trials, Mississippi; randomized plots, 10 by 100 ft; silty sand and loamy clay soils; 8 wk evaluations

<2996> CONT.
EFFECTS: Two sites, 60 and 80% weed control; relatively non-toxic to pines
COMMENTS: No specific phytotoxic information on pines
REFERENCE: O'Loughlin, T.C., L.R. Nelson, J.D. Walstad, J.H. Breland, and J.E. Voeller, "Velpar and Other Preemergence Herbicides for Use in Establishment of Loblolly Pine Plantations," Proc. South. Weed Sci. Soc. 29:262-268 (1976).

<2997>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Cucumber (CUCUMIS SATIVUS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Galinsoga (GALINSOGA PARVIFLORA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed, prostrate (AMARANTHUS BLITOIDES); Foxtail, giant (SETARIA FABERI); Purslane, common (PORTULACA OLERACEA); Lamb's-quarters (CHENOPODIUM ALBUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Murrill loam; fall plowing, seedbed preparation the following May 28; cucumber planted 12 days later on June 10; herbicides applied 1 day after planting; single row plots 5 by 36 ft
EFFECTS: Good weed control but severe cucumber injury; significant cucumber stand reduction
REFERENCE: Noll, C.J., "Herbicide Weeding of Cucumber Grown in a Stale Seed Bed," Proc. Northeast. Weed Sci. Soc. 29:262-263 (1975).

<2998>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.25 lb/A
APPLICATION METHODS: Postemergence treatment in water at 30 gpa; 0.5% by volume of tank mix of surfactant X-77 added
EXPERIMENTAL CONDITIONS: 3 year experiment (1968-1970); 4 applications at 2-to 3-day intervals to each plot, initial application made in June; randomized split-plot design, 16 ft rows 3 ft apart; directed postmemergence spray to plant base; plant injury, stem damage, and yield among primary observations
EFFECTS: Early season injury--no significant injury in 1968, significant injury at all applications in 1969 but only at application 4 in 1970; no late season injury; significant stem damage at application 2, 3, and 4 in 1969 & 1970; no significant yield decrease
COMMENTS: Early season injury--lower leaves killed from spray application; late season injury--chlorotic venation and leaf deterioration
REFERENCE: Johnson, B.J., "Multiple Applications of Herbicides on Soybeans," Ga. Agric. Res. 14(1):5-8 (1972).

<2999>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 1.7 kg/ha
APPLICATION METHODS: Postemergence application
EXPERIMENTAL CONDITIONS: Four field tests--2 seeded in fall, 2 in spring; fall seedings in September, spring seedings in April; herbicide treatments were main plots, legumes were subplots; early injury and control ratings made 5 to 10 weeks after seeding, later observations made 3 to 4 weeks after initial recordings for spring planting and the following spring for fall plantings
EFFECTS: Alfalfa--20% early and 28% late injury; clover--26% early and 36% late injury; crownvetch--60% early and 71% late injury; broadleaf weeds--65% early and 80% late control
COMMENTS: No apparent difference legume injury from spring and fall treatments; results represent combined fall and spring observations
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<3000>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Squash, summer (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence; postemergence application of BAS-3512 H only
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7; time period--1972
EFFECTS: Moderate to effective control of all weeds except crabgrass (no control) with no injury to cucumbers and slight injury to squash
COMMENTS: Effective control of large crabgrass, redroot pigweed, common ragweed and lambsquarters in seeded cucumbers and summer squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence and preemergence applications of chloramben methyl ester alone
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<3001>
<3001>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Spinach (SPINACIA OLERACEA); Grasses; Purslane, common (PORTULACA OLERACEA); Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 3.0 and 6.0 lb/A; 3% EC
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence applications
EXPERIMENTAL CONDITIONS: Field study; soil--Norfolk loamy sand; irrigation
EFFECTS: Effective control of purslane only at 6.0 lb/A with slight-moderate control of other weeds and very slight damage to lima beans
COMMENTS: Acceptable weed control and yields obtained with trifluralin and profluralin; dinitramine significantly reduced stand, vigor, and yields of baby lima beans; alachlor provided acceptable weed control without yield reduction; combined herbicide applications just as effective
REFERENCE: Beste, C.E., "New Herbicides for Lima Beans," Proc. Northeast. Weed Sci. Soc. 29:194-196 (1975).

<3002>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Plants; Potato (SOLANUM TUBEROSUM); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 3.0 lb/A; EC
APPLICATION METHODS: Postemergence, preemergence, and preplant incorporated sprays; 38 gal/A; 20 psi; granular materials applied with cone-type applicator; varied combined treatments evaluated
EXPERIMENTAL CONDITIONS: Field study; three locations; rye cover crop after harvest
EFFECTS: Slight control of weeds and no adverse effect on crops in postemergence application
COMMENTS: Most treatments did not result in commercially acceptable control levels because of a number of conditions which reduced effectiveness of weed control in 1972
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<3003>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Potato (SOLANUM TUBEROSUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: 3% EC preemergence spray at 20 psi and 30 gal/A volume
EXPERIMENTAL CONDITIONS: April planting; plots--2 rows wide by 30 ft long; randomized complete block design; treatments replicated five times in experiments 1 and 3 and four times in others; total of 5 experiments; rye seeded following potato harvest
EFFECTS: Experiment 3--no phytotoxic effect on potato or rye crops, commercially unacceptable weed control
COMMENTS: Author notes that growing conditions (cool spring and high June rainfall) - caused vigorous weed growth and retarded potato growth, thus reason for commercially unacceptable weed control; herbicide combinations also discussed
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<3004>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Soybean (GLYCINE MAX); Cocklebur, common (XANTHIUM PENSYLVANICUM); Morningglory, tall (IPOMOEA PURPUREA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Sida, spiny (SIDA SPINOSA)
EXPERIMENTAL DOSE: 0.56, 1.12, and 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 0.5% Adjuvan-T surfactant; directed and semi-directed application; topical application to weeds at different growth stages
EXPERIMENTAL CONDITIONS: Field study; soil--Crowley silt loam and Taloka silt loam; combined treatments; time period-- 1968 to 1970
EFFECTS: Slight to moderate damage at all rates initially to soybean but no adverse effect on yield; effective control of all weeds except pigweed at 2.24 kg/ha
COMMENTS: Chloroxuron damaging when applied twice to soybean and reduced yields in one of two year's studies; direct comparisons of topical applications of dinoseb and chloroxuron showed that soybean injury increased with increased rate of material at each soybean growth stage with the most severe initial damage in the two-trifoliate stage
REFERENCE: Baldwin, F.L. and R.E. Frans, "Soybean and Weed Response to Dinoseb and Chloroxuron Applied Topically," Weed Sci. 20(5):511-514 (1972).

<3005>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Soybean (GLYCINE MAX); Cocklebur, common (XANTHIUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 1.7 kg/ha
APPLICATION METHODS: Preemergence (metribuzin); postemergence (bentazon); postemergence directed (dinoseb and 2,4-DB); 187 l./ha; varied combined and sequential treatments
EXPERIMENTAL CONDITIONS: Field study; soil--Sharkey clay loam; time period--1971 to 1973
EFFECTS: Moderate control of cocklebur with no adverse effect on soybean yield
COMMENTS: Sequential applications of metribuzin applied preemergence, and dinoseb, 2,4-DB, applied postemergence, provided at least 90% control of common cocklebur and increased soybean yields; use of single herbicide applications less effective than sequential applications, but metribuzin applied preemergence more effective in controlling common cocklebur and increasing soybean yields than single applications of any herbicide applied postemergence
REFERENCE: McWhorter, C.G. and J.M. Anderson, "Effectiveness of Metribuzin Applied Preemergence for Economical Control of Common Cocklebur in Soybeans," Weed Sci. 24(4):385-390 (1976).

<3006>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: DNBP
PLANT: Broadleaf weeds; Grasses; Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 4.5 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of broadleafs and moderate control of grasses with no adverse effect on potato
COMMENTS: Chlorbromuron and linuron gave effective control of broad-leaved perennial weed species growing in white potatoes; late seascn annual grass control attained only by combining alachlor with chlorbromuron and linuron
REFERENCE: Murphy, H.J., "Effect of Combinations of Chlorbromuron and Linuron with Alachlor on Yield and Weed Control in White Potatoes in Maine," Proc. Northeast. Weed Sci. Soc. 28:299-302 (1974).

<3007>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: DNBP
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 4.5 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--gravelly silt loam
EFFECTS: Effective control of weeds with no adverse effect on potato yield
COMMENTS: EPTC and profluralin applied preplant incorporated provided full season control of annual barnyard grass in potatoes; either compound when combined with preemergence herbicides linuron, chlorbromuron, or DNBP provided full season control of BRASSICA NIGRA, BRASSICA CAMPESTRIS, POLYGONUM PERSICARIA, and CHENOPODIUM ALBUM
REFERENCE: Murphy, H.J., "Effect of Several Combinations of Preplant Incorporated and Preemergence Herbicides on Weed Control in Potatoes," Proc. Northeast. Weed Sci. Soc. 29:281-283 (1975).

<3008>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Squash, summer (CUCURBITA PEPO); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass (DIGITARIA sp.); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 2.0, 3.0, and 4.0 lb/A
APPLICATION METHODS: Preemergence application
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of fall panicum; moderate control of lambsquarters and pigweed; poor control of crabgrass; no injury to squash plants
COMMENTS: Outstanding preplant incorporated treatment was bensulide followed by chloramben, methyl ester applied preemergence; outstanding preemergence treatment for both weed control and yield was chloramben, methyl ester + asulam; crop injury induced by following preplant incorporated treatments: dibutalin, dinitramine (USB 3584), nitralin, and bensulide followed by naptalam applied preemergence
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "Some Promising Herbicides for Weed Control in Summer Squash," Proc. Northeast. Weed Sci. Soc. 28:224-228 (1974).

<3009>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: DNPB
PLANT: Broadleaf weeds; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 4.5 lb/A
APPLICATION METHODS: Preplant and preemergence sprays; 80 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Invaried applications, gnerally effected control of broadleafs with moderate control of grasses and no adverse effect on pototo yield
COMMENTS: Most herbicides somewhat ineffective for annual grass control; S-6044, M&B20035, and oxadiazolin all ineffective for control of annual grasses; combinations of oryzalin with metribuzin, methazole, and linuron also provided good broadleaved weed and quackgrass control; oryzalin alone not effective for annual grass or quackgrass control
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in White Potatoes in Maine - 1973," Proc. Northeast. Weed Sci. Soc. 28:287-295 (1974).

<3010>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Peanut (ARACHIS HYPOGAEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Junglerice (ECHINOCHLOA COLONUM); Bermudagrass (CYNODON DACTYLON); Nightshade (SOLANUM VILLOSUM)
EXPERIMENTAL DOSE: 1.08 kg/ha
APPLICATION METHODS: Postemergence spray; aqueous carrier-500 l./ha; 60 sq m plots
EXPERIMENTAL CONDITIONS: Field study; sprinkle irrigation 24 hr after herbicide application and every 2 wk thereafter; sandy loess scil; temperature--20 to 25 C; RH--51 to 68%; weekly hand weeding of controls; phosphorus addition--500 to 600 kg/ha; monthly cultivation when employed
EFFECTS: Effective weed control with application of herbicides singly, in combination, or in conjunction with monthly cultivation; no or minimal effect on peanut yield
COMMENTS: Evaluation of eleven herbicides or herbicide combinations; hand weeding most effective; benefin alone and benefin/terbutryn, alachlor/ terbutryn, diphenamid/terbutryn, and benefin/alachlor combinations as effective as hand weeding with no adverse effect on peanut yield
REFERENCE: Amir, J. and N. Lifshitz, "Weed Control of Irrigated Peanuts in an Arid Zone," J. Agric. Sci. Camb. 86:623-626 (1976).

<3011>
<3011>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: DNBP
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 6.0 and 12.0 lb/A
APPLICATION METHODS: Preplant non-incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: At 6.0 lb/A, effective weed control with slight damage of corn and soybean and no adverse effect on cotton
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but fairly safe on corn; MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(isopropylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<3012>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: DNBP
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.0 to 18.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: No control of weeds or adverse effect on cotton
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<3013>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Soybean (GLYCINE MAX); Sida, spiny (SIDA SPINOSA)
EXPERIMENTAL DOSE: 1.68 kg/ha
APPLICATION METHODS: Postemergence spray; 0.5% v/v Multifilm X-77
EXPERIMENTAL CONDITIONS: Field study; soils--Loring silt loam and Collins silt loam; preplant soil incorporation of herbicides not effective for prickly sida; evaluation times--3 wk (preemergence) and 2 wk (postemergence)
EFFECTS: Effective control of sida for 2 of 3 years with slight vigor reduction and stand reduction in soybean
COMMENTS: Chlorbromuron provided better control of prickly sida than did linuron which was more consistently effective than naptalam plus dinoseb; chlorbromuron applied as preemergence treatment caused slight crop injury; in most cases preemergence treatments followed by cultivation were effective in providing season-long control; descending order of effectiveness for prickly sida control by the postemergence herbicides was: chlorbromuron, metribuzin, prometryne, dinoseb
REFERENCE: Jeffery, L.S., J. Connell, T. McCutchen, and J.R. Overton, "Response of Prickly Sida and Soybeans to Various Herbicides," Weed Sci. 24(2):202-204 (1976).

<3014>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: DNBP
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 8.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate weed control with no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<3015>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Willow (SALIX sp.); Eucalyptus, red gum (EUCALYPTUS CAMALDULENSIS)
EXPERIMENTAL DOSE: 10 and 100 mg/l.
APPLICATION METHODS: Exposed plant roots placed in 1.0 liter herbicide solution for 1 hr; alkanolamine salt formulation
EXPERIMENTAL CONDITIONS: Pot studies; plastic pot (holes in bottom) with plant placed on top of another pot containing soil; after root growth through holes into second pot, plants carefully removed and placed on top of pot containing herbicide solution; 1-hr herbicide exposure
EFFECTS: Willow--10 mg/l. killed roots without foliage injury, 100 mg/l. completely killed roots and tops, serious leaf injury after 24 hr; eucalyptus--foliage injury slight, root kill poor at 100 mg/l.
REFERENCE: Ahrens, J.F., O.A. Leonard, and N.R. Townley, "Chemical Control of Tree Roots in Sewer Lines," J. Water Pollut. Control Fed. 42(9):1643-1655 (1970).

<3016>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Cocklebur, Pennsylvanian (XANTHIUM PENSYLVANICUM); Jimsomweed (DATURA STRAMONIUM); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Morningglory, tall (IPOMOEA PURPUREA)
EXPERIMENTAL DOSE: 1.68 and 3.36 kg/ha
APPLICATION METHODS: Experiment A--postemergence at 280.5 l./ha; experiment B--postemergence and postdirected at 280.5 l./ha, 1/3 of soybean height sprayed with postdirected treatment
EXPERIMENTAL CONDITIONS: Experiment A--no soybeans, 1.5 by 4.6 m plots, 30 cm tall cocklebur and jimsonweed, 15 cm tall morningglory, dead or injured and living plants counted in 4.6 m(2), with and without cultivation; experiment B--soybeans planted, 25 to 30 cm tall jimsonweed; mattapex silt loam and randomized complete block design with 4 replications in both experiments
EFFECTS: Non-effective cocklebur control at both cultivated rates and at 1.68 kg/ha not cultivated, 3.36 kg/ha not cultivated was not much better; excellent jimsonweed control; morningglory significantly reduced only at 3.36 kg/ha not cultivated
COMMENTS: Dinoseb applied singly in experiment A, in combination with other herbicides in experiment B
REFERENCE: Parochetti, J.V., "Postemergence and Postdirected Broadleaved Weed Control for Soybeans," Proc. Northeast. Weed Sci. Soc. 27:75-79 (1973).

<3017>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Soybean (GLYCINE MAX); Jimsomweed (DATURA STRAMONIUM)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: Preplant incorporated and "at cracking" treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies; Mattapex silt loam; 10 by 20 ft plots, 4 rows of soybeans, 4 replications; spring planting
EFFECTS: Preemergence--no soybean injury, poor jimsonweed control; at cracking--minor soybean injury (vigor reduction and necrosis), poor jimsonweed control
COMMENTS: Combinations of herbicides also tested
REFERENCE: Parochetti, J.V., "Control of Jimsonweed and Three Broadleaved Weeds in Soybeans with Herbicides," Proc. Northeast. Weed Sci. 29:19-25 (1975).

<3018>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: DNBP
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Oat (AVENA SATIVA); Soybean (GLYCINE MAX); Sorghum, grain (SORGHUM BICOLOR); Pea, sweet (PISUM SATIVUM); Bean, snap (PHASEOLUS VULGARIS); Corn (ZEA MAYS); Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 3.0 to 48.0 lb/A; alkanolamine salts
APPLICATION METHODS: Preemergence spray and exposure to vapor by enclosing pot-grown plants in plastic bags
EXPERIMENTAL CONDITIONS: Greenhouse study; flat and culture
EFFECTS: At 12.0 lb/A, severe damage or kill of cotton, otas, soybean, and sorghum with moderate damage and some kill of peas, beans, corn, and peanuts
COMMENTS: Crops decreased significantly in susceptibility to a pre-emergence application of DNB as follows: cotton, oats, soybeans, grain sorghum, English peas, corn, snap beans, and peanuts; relative susceptibility of one crop as compared with another essentially same whether crop exposed to vapor only or to contact in pre-emergence application; effects on above-ground parts quite different
REFERENCE: Davis, D.E. and H.H. Funderburk, "Variability in Susceptibility to Injury by DNBP," Weeds 6:454-460 (1958).

<3019>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Plants; Lotus (LOTUS PEDUNCULATUS)
EXPERIMENTAL DOSE: 2.2, 3.4, and 4.5 kg/ha; acetate
APPLICATION METHODS: Preemergence spray; 560 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Tokomaur silt loam, time period--1974 and 1975
EFFECTS: At 3.4 kg/ha, effective weed control with early growth reduction but no adverse effect on lotus
COMMENTS: Dinoseb most effective of 6 pre-emergence herbicides tested and 2,4-DB best of 5 postemergence herbicides; crop showed no tolerance towards atrazine, cyanazine, metribuzin, or bentazone
REFERENCE: Ivens, G.W., "Preliminary Evaluation of Pre- and Post-Emergence Herbicides in "Maku" Lotus," Proc. 28th. New Zealand Weed and Pest Cont. Conf. 28:31-34 (1975).

<3020>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dow General
PLANT: Plants; Bean, lima (PHASEOLUS LIMENSIS); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 5.0 and 10.0 lb/A
APPLICATION METHODS: Preemergence spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At 5.0 lb/A, effective weed control with no adverse effect on bean but total reduction of direct-seeded cauliflower and no adverse effect on transplanted cauliflower
COMMENTS: Premerge, Dow General and K-1131-Na, and all dinitros, gave excellent control of weeds with no bean crop injury for two months
REFERENCE: Jacob, W.C., "Pre-Emergence Weed Control in Lima Beans and Cauliflower," Proc. N.E. Weed Cont. conf. 5:1-5 (1951).

<3021>
<3021>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Pea, sweet (PISUM SATIVUM); Plants
EXPERIMENTAL DOSE: 1.9 lb/A; amine
APPLICATION METHODS: Postemergence spray; 20 or 50 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1971 and 1972
EFFECTS: Moderate to effective control of weeds with slight adverse effect on pea
COMMENTS: Cyanazine did not cause serious crop damage, except on a free-draining soil where leaching occurred, but knotgrass not adequately controlled
REFERENCE: King, J.M. and R.P. Handley, "Post-Emergence Herbicide Experiments in Peas and Dwarf Beans," Proc. 11th. Br. Weed Cont. Conf. 11(2):539-546 (1972).

<3022>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: Dinoseb
PLANT: Aster, blue wood (ASTER CORDIFOLIUS); Bindweed, field (CONVOLVULUS ARVENSIS); Bindweed, hedge (CONVOLVULUS SEPIUM); Carrot, wild (DAUCUS CAROTA); Chickweed, common (STELLARIA MEDIA); Chickweed, mouse-ear (CERASTIUM VULGATUM); Clover (TRIFOLIUM sp.); Copperleaf, Virginia (ACALYPHA VIRGINICA); Daisy, oxeye (CHRYSANTHEMUM LEUCANTHEMUM); Dandelion (TARAXACUM OFFICINALE); Dock, broad-leaf (RUMEX OBTUSIFOLIUS); Dogbane, hemp (APOCYANUM CANNABINUM); Fleabane, annual (ERIGERON ANNUS); Horsenettle (SOLANUM CAROLINENSE); Ironweed (VERONICA ALTISSIMA); Poison ivy (RHUS RADICANS); Ladysthumb (POLYGONUM PERSICARIA); Onion, wild (ALLIUM sp.); Plantain, broad-leaf (PLANTAGO MAJOR); Plantain, buckhorn (PLANTAGO LANCEOLATA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Sorrell, red (RUMEX ACETOSELLA); Spanish needles (BIDENS BIPINNATA); Vetch, common (VICIA SATIVA); Violet (VIOLA sp.); Sorrell, wood (OXALIS STRICTA); Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 4.48 and 22.4 kg/ha: amine or oil additive
APPLICATION METHODS: Postemergence spray; 1870 l/ha (low rate) and 9350 l/ha (high rate); applied to ground cover and soil beneath apple trees
EXPERIMENTAL CONDITIONS: Field study; annual applications over 6 yr period (1957 throug 1962)
EFFECTS: Slight to effective control of broadleaf weeds with little or no control of grass weeds and no adverse effect on apple trees; amine formulation slightly more effective than formulation containing oil
COMMENTS: Single applications 2,4,5-T ester, 2,4,5-T amine, and silvex to ground cover and soil under apple trees significantly reduced proportion of broadleaf plants to grasses; after six annual applications, ground cover consisted of almost pure stands of grasses; six applications of dinoseb + oil decreased proportion of broadleaf weeds to grasses; one application did not change proportion; one and six annual applications of dinoseb amine significantly reduced broadleaf weeds
REFERENCE: Schubert, O.E., "Plant Cover Changes Following Herbicide Applications in Orchards," Weed Sci. 20(1):124-127 (1972).

<3023>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: DNBP
PLANT: Soybean (GLYCINE MAX); Plants
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Preemergence spray; not less than 16 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period -- 1958 and 1959
EFFECTS: Moderate weed control with no adverse effect on soybean yield
COMMENTS: Mixture of CDAA and DNBP consistently gave better control of annual weeds in soybeans than either CIPC, NPA, CDAA or DNBP alone; green foxtail, barnyardgrass, lambsquarters, rough pigweed, purslane, ragweed, field pennycress and wild buckwheat controlled by this mixture; although some varieties of soybeans were more susceptible than others to a distortion of the plumular leaves caused by the CDAA, none permanently injured at rates used
REFERENCE: Hay, J.R., "Pre-Emergence Weed Control in Soybeans with Mixtures of Two Herbicides," Weeds 9(1):117-123 (1961).

<3024>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-
CHEMICAL COMMON NAME: DNBP
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 35 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; soil -- Tifton sandy loam; time period -- 1959 and 1960
EFFECTS: Moderate weed control with no adverse effect on peanut
COMMENTS: Certain mixtures, which contained sesone, 2,1-DEP, or amiben mixed with DNBP, gave seasonal weed control on band-treated peanuts; compared to herbicides applied singly, mixtures not only increased spectrum of weeds controlled but also permitted use of lowest rate of each component on weeds for which it was most effective
REFERENCE: Hauser, E.W., W.C. Shaw, H.F. Harrison, and S.A. Parham, "Herbicides and Herbicide Mixtures for Weed Control in Peanuts," Weeds 10(2):139-144 (1962).

<3025>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-, acetate (ester)
CHEMICAL COMMON NAME: Dinoseb-acetate
PLANT: Bluegrass, annual (POA ANNUA); Chickweed, common (STELLARIA MEDIA); Bird's-eye (VERONICA PERSICA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Pineappleweed (MATRICARIA MATRICARIOIDES); Pimpernel, common (ANAGALLIS ARVENSIS); Fumitory (FUMARIA OFFICINALIS); Plantain, broad-leaf (PLANTAGO MAJOR); Knotweed (POLYGONUM AVICULARE); Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 2.8 kg/ha; EC
APPLICATION METHODS: Postemergence spray; 450 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--calcareous loam; malathion spray for black-fly
EFFECTS: Moderate to effective control of most weeds with slight initial damage to but no adverse effect on

<3025> CONT.
field bean yield
COMMENTS: Pre-emergence applications of simazine and of dimefuron effectively controlled weeds; bean seed yields similar to regularly hand-weeded control; dinoseb-acetate and early, but not late, post-emergence applications of dimefuron controlled weeds satisfactorily; dimefuron potentially useful in spring-sown field beans because it can be applied pre- or early post-emergence without damaging crop
REFERENCE: Glasgow, J.L., J.W. Dicks, and D.R. Hodgson, "Competition by, and Chemical Control of, Natural Weed Populations in Spring-Sown Field Beans (VICIA FABA)," Ann. Appl. Biol. 84(2):259-269 (1976).

<3026>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-, alkanolamine salt
CHEMICAL COMMON NAME: Premerge
PLANT: Spinach (SPINACIA OLERACEA); Plants
EXPERIMENTAL DOSE: 1.0 and 1.5 gal/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; single and double spinach seeding rates and normal and delayed times
EFFECTS: Effective weed control (delayed seeding) but severe reduction of spinach yield
COMMENTS: No chemical increased yield of spinach; two chemicals in normal seeding plots and 5 chemicals in delayed seeding plots gave as good yield as untreated and significant increase in weed control
REFERENCE: Noll, C.J. and M.L. Odland, "Pre-Emergence Weeding of Spinach With Chemical Herbicides," Proc. N.E. Weed Cont. Conf. 5:115-117 (1951).

<3027>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-, alkanolamine salt
CHEMICAL COMMON NAME: Premerge
PLANT: Plants; Bean, lima (PHASEOLUS LIMENSIS); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 5.0 and 10.0 lb/A
APPLICATION METHODS: Preemergence spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At 5.0 lb/A, effective weed control with no adverse effect on bean but total reduction of direct-seeded cauliflower and no adverse effect on transplanted cauliflower
COMMENTS: Premerge, Dow General and K-1131-Na, and all dinitros, gave excellent control of weeds with no bean crop injury for two months
REFERENCE: Jacob, W.C., "Pre-Emergence Weed Control in Lima Beans and Cauliflower," Proc. N.E. Weed Cont. conf. 5:1-5 (1951).

<3028>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-, ammonium salt
CHEMICAL COMMON NAME: Sinox W
PLANT: Spinach (SPINACIA OLERACEA); Plants
EXPERIMENTAL DOSE: 3.0 and 4.0 gal/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; single and double spinach seeding rates and normal and delayed times
EFFECTS: Moderate weed control and reduced spinach yield
COMMENTS: No chemical increased yield of spinach; two chemicals in normal seeding plots and 5 chemicals in delayed seeding plots gave as good yield as untreated and significant increase in weed control
REFERENCE: Noll, C.J. and M.L. Odland, "Pre-Emergence Weeding of Spinach With Chemical Herbicides," Proc. N.E. Weed Cont. Conf. 5:115-117 (1951).

<3029>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro-, ammonium salt
CHEMICAL COMMON NAME: Dow Selective
PLANT: Spinach (SPINACIA OLERACEA); Plants
EXPERIMENTAL DOSE: 3.0 and 3.5 gal/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; single and double spinach seeding rates and normal and delayed times
EFFECTS: Moderate weed control and severely reduced spinach yield
COMMENTS: No chemical increased yield of spinach; two chemicals in normal seeding plots and 5 chemicals in delayed seeding plots gave as good yield as untreated and significant increase in weed control
REFERENCE: Noll, C.J. and M.L. Odland, "Pre-Emergence Weeding of Spinach With Chemical Herbicides," Proc. N.E. Weed Cont. Conf. 5:115-117 (1951).

<3030>
CHEMICAL NAME: Phenol, 2-(1-methylpropyl)-4,6-dinitro, ammonium salt
CHEMICAL COMMON NAME: Ammonium DNBP
PLANT: Pine, Scots (PINUS SYLVESTRIS); Spruce, sitka (PICEA SITCHENSIS); Larch, Japanese (LARIX sp.)
EXPERIMENTAL DOSE: 0.1, 0.2 and 0.4%
APPLICATION METHODS: Treatment when most seedlings in young true leaf stage; spray at 100 gpa
EXPERIMENTAL CONDITIONS: Pot studies; spraying performed in greenhouse but pots placed outside for test; watering when necessary; acute and chronic toxicity assessed; weed control not studied
EFFECTS: 94, 94, and 100% kill of pine (after 2 mo), spruce (after 15 days), and larch (after 1 mo), respectively, at 0.4%; some trees killed at 0.1 and 0.2%
REFERENCE: Srivastava, T.N., "The Applications of Selective Herbicides to Forestry Practice," Indian For. 77:176-191 (1951).

<3031>
<3031>
CHEMICAL NAME: Phenol, 2-(4,5-dimethyl-1,3-dioxolan-2-yl)-, methylcarbamate
CHEMICAL COMMON NAME: C-10015
PLANT: Spangletop, bearded, (LEPTOCHLOA FASCICULARIS)
EXPERIMENTAL DOSE: 5.6 to 33.6 kg/ha
APPLICATION METHODS: Preplant incorporated (3 to 4 cm depth) by subsurface insecticide applicator; 10% G formulation
EXPERIMENTAL CONDITIONS: Field study; rutabagas harvested after 60 days at 30-day intervals thereafter; whole, sliced, and peelings used to evaluate insecticide persistence with first instar maggots of HYLEMA BRASSICAE
EFFECTS: Undefined phytotoxic effect on rutabagas at higher application rates
COMMENTS: At high rates, phytotoxicity recorded for all compounds except trichloronat and fonofos; phytotoxicity so severe with AC64475 that all plants destroyed with rates in excess of 11.2 kg/acre
REFERENCE: Read, D.C., "Toxicity of Carbamate and Organophosphorus Insecticide Residues Absorbed by Rutabagas Grown in Treated Soil," Can. Entmol. 106(7):1319-1325 (1974).

<3032>
CHEMICAL NAME: Phenol, 2-(4,5-dimethyl-1,3-dioxolan-2-yl)-, methylcarbamate
CHEMICAL COMMON NAME: C-10015
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 to 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: No leaf damage at any rate and stand reduction at highest rate only
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3033>
CHEMICAL NAME: Phenol, 2-amino-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Moderate damage of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<3034>
CHEMICAL NAME: Phenol, 2-amino-4arsenoso-, hydrochloride
CHEMICAL COMMON NAME: Mapharsine
PLANT: Oat, wild (AVENA FATUA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1.5 X 10(-5) M
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; oat and pea coleoptile assays
EFFECTS: Inhibited growth
COMMENTS: Arsenite, parachloromercuribenzoate, and phenylmercuric salts inhibited growth; inhibitions differed from those caused by iodoacetate in that they were not prevented or reversed by malate or other organic acids; difference ascribed to greater affinity of enzyme for these substances than for iodoacetate
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. II. The Action of Several Enzyme Inhibitors on the Growth of the AVENA Coleoptile and on PISUM Internodes," Am. J. Bot. 36:214-221 (1949).

<3035>
CHEMICAL NAME: Phenol, 2-cyclohexyl-4,6-dinitro-, compd. with N-cyclohexylcyclohexanamine (1:1)
CHEMICAL COMMON NAME: DN-111
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.25 oz/bushel
APPLICATION METHODS: Seed treatment; WP formulations
EXPERIMENTAL CONDITIONS: Field study; slurry treatments of seed; plot--18-ft row with 100 seeds; 8 replications; 19-month old seeds
EFFECTS: No seedling emergence
REFERENCE: Starks, K.J. and J.H. Lilly, "Insecticide Seed Treatment of Soybeans in Relation to Phytotoxicity and Seed-Corn Maggot Control," J. Econ. Entomol. 48(5):538-543 (1955).

<3036>
CHEMICAL NAME: Phenol, 2-methyl-4,6-dinitro-
CHEMICAL COMMON NAME: DNOC
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 1.0 to 4.0 lb/A
APPLICATION METHODS: Preplanting spray
EXPERIMENTAL CONDITIONS: Field study, soil--Sassafras loam; evaluation time--7 wk
EFFECTS: At 2.0 to 4.0 lb/A; effective control of broadleaf weeds and slight to moderate control of grasses with no adverse effect on crops
COMMENTS: 2,4-D toxic to both grasses and broadleaf weeds, whereas Sinox only slightly toxic to grasses but very toxic to broadleaf weeds
REFERENCE: Danielson, L.L., "Selectivity of 2,4-D and Sinox When Applied to Soil," Plant Phy. 22:635-636 (1947).

<3037>
CHEMICAL NAME: Phenol, 2-methyl-4,6-dinitro-
CHEMICAL COMMON NAME: DNOC
PLANT: Wheat (TRITICUM AESTIVUM); Wheatgrass, crested (AGROPYRON CRISTATUM); Caragana; Box elder (ACER NEGUNDO)
EXPERIMENTAL DOSE: 0.2 to 2.3 lb/A (av. 1.1 lb/A)
APPLICATION METHODS: Aerial spray for grasshopper control
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight damage to wheat and none to wheatgrass with severe foliage injury of caragana, boxelder, lambs quarters, and stinkweed.
COMMENTS: No appreciable damage to crested wheat grass on road; visibly burned, but examination of heads 5 weeks later indicated that crop probably not damaged; weeds in crop, mainly stinkweed and lambs quarters, heavily burned and latter's growth definitely retarded
REFERENCE: Brown, A.W.A., "Control of CAMNULA PELLUCIDA with DNOC Emulsion from Aircraft," J.Econ. Ent. 40(4):606 (1947).

<3038>
CHEMICAL NAME: Phenol, 2-methyl-4,6-dinitro-
CHEMICAL COMMON NAME: DNOC
PLANT: Barley (HORDEUM VULGARE); Cocklebur, Pennsylvanian (XANTHIUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 10.0 to 30.0 ppm
APPLICATION METHODS: Addition to culture solution
EXPERIMENTAL CONDITIONS: Environmental chamber; hydroponic culture; whole roots or one-third of roots immersed in test solutions; pH--7.0; temperature--16 to 23 C; RH--50 to 70%; photoperiod--12 hr
EFFECTS: At higher concentrations, death of both test species
COMMENTS: Propham, chlorpropham, atratone and 2,3,6-TBA killed plants whether application was to one-third or all roots; roots in direct contact with propham, chlorpropham and 2,3,6-TBA deformed or killed, while roots in uncontaminated solution remained healthy; atratone and chlorpropham transmitted to roots not in toxic solution
REFERENCE: Lyndsay, R.V. and G.S. Hartley, "Studies of the Response of Plants to Root-Applied Herbicides," Weed Res. 3(3):195-204 (1963).

<3039>
CHEMICAL NAME: Phenol, 2-methyl-4,6-dinitro-
CHEMICAL COMMON NAME: DN
PLANT: Azalea (RHODODENDRON INDICUM); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 4.5, 6.0, and 9.0 lb/A; vermiculite carrier
APPLICATION METHODS: Broadcast
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control at 9.0 lb/A with no adverse effect on azalea
COMMENTS: PCP, DN, and CIPC superior at high rates against summer weeds in azalea beds, whereas fall weeds best controlled by CIPC, diuron, Geigy 444, and CDEC, no apparent foliar or other damage resulted from any treatments
REFERENCE: Chappell, W.E., "The Use of Granular Herbicides in Azaleas," Proc. Southern Weed Conf. 10:105-107 (1957).

<3040>
CHEMICAL NAME: Phenol, 2-methyl-4,6-dinitro-
CHEMICAL COMMON NAME: DN
PLANT: Azalea (RHODODENDRON INDICUM); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 4.5, 6.0, and 9.0 lb/A; vermiculite carrier
APPLICATION METHODS: Broadcast
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control at 9.0 lb/A with no adverse effect on azalea
COMMENTS: PCP, DN, and CIPC superior at high rates against summer weeds in azalea beds, whereas fall weeds best controlled by CIPC, diuron, Geigy 444, and CDEC, no apparent foliar or other damage resulted from any treatments
REFERENCE: Chappell, W.E., "The Use of Granular Herbicides in Azaleas," Proc. Southern Weed Conf. 10:105-107 (1957).

<3041>
<3041>
CHEMICAL NAME: Phenol, 2-methyl-4,6-dinitro-
CHEMICAL COMMON NAME: DNOC
PLANT: Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 4.0 kg/ha
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field/greenhouse study; field herbicide application and seed collecting; greenhouse pot culture for seed viability; annual applications for 12 yr; abnormal plants produced from some viable seed
EFFECTS: Reduced seed survival
COMMENTS: Reduction in total weed seeds by different control measures was: DNOC greater than 2,4-D greater than calcium cyanamide greater than MCPA greater than "rotation" greater than harrow; rotation was a rotation of MCPA, DNOC, calcium cyanamide, and harrowing
REFERENCE: Hurle, K., "Effect on Long-Term Weed Control Measures on Viable Weed Seeds in the Soil," Proc. 12th Brit. Weed Contr. Conf. 12(3):1145-1152 (1974).

<3042>
CHEMICAL NAME: Phenol, 2-methyl-4,6-dinitro-
CHEMICAL COMMON NAME: DNOC
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--11-30% root and no stem inhibition at 10 ppm, 61-90% root and 31-60% stem inhibition at 100 ppm, complete root and complete stem inhibition at 1000 ppm; rice--11-30% root and no stem inhibition at 10 ppm, 91% or greater root and 61-90% stem inhibition at 100 ppm, complete root and complete stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives with Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 22(3):345-352 (1968).

<3043>
CHEMICAL NAME: Phenol, 2-nitro-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 250, 500, and 1000 mg/l.
EXPERIMENTAL CONDITIONS: Lateral roots used; mitotic index of control, 112
EFFECTS: Percentage of abnormal mitotic cells--8.43, 3.51, and 2.93% at 1000, 500, and 250 mg/l., respectively; mitotic indix--68, 83, and 90 at 1000, 500, and 250 mg/l., respectively
COMMENTS: Induced types of abnormalities--(1) disturbed type (disturbed metaphases, prophase-metaphases and disturbed ana-telophases), (2) lagging chromosomes, (3) stickiness, (4) fragmentation, and (5) cytomixis; tables in paper indicate percentages of each
REFERENCE: Amer, S.M. and E.M. Ali, "Cytological Effects of Pesticides IV. Mitotic Effects of Some Phenols," Cytologia 34:533-540 (1969).

<3044>
CHEMICAL NAME: Phenol, 2,2'-(2,2,2-trichloroethylidene)bis-[4-chloro-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse effect on peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<3045>
CHEMICAL NAME: Phenol, 2,2'-methylenebis[3,4,6-trichloro-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse effect on peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<3046>
CHEMICAL NAME: Phenol, 2,2'-methylenebis[4-chloro-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Slight damage to peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<3047>
CHEMICAL NAME: Phenol, 2,4-dichloro-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 62.5 mg/l.
EXPERIMENTAL CONDITIONS: Lateral roots used; mitotic index of control, 147
EFFECTS: Percentage of abnormal mitotic cells, 3.88%; mitotic index, 95
COMMENTS: Induced types of abnormalities--(1) disturbed type (disturbed metaphases, prophase-metaphases and disturbed ana-telophases) (2) lagging chromosomes, (3) stickiness, (4) fragmentation, and (5) cytomixis; tables in paper indicate percentages of each
REFERENCE: Amer, S.M. and E.M. Ali, "Cytological Effects of Pesticides IV. Mitotic Effects of Some Phenols," Cytologia 34:533-540 (1969).

<3048>
CHEMICAL NAME: Phenol, 2,4-dinitro-
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Poor control of shoot emergence at all application rates
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch, pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3049>
CHEMICAL NAME: Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-, methylcarbamate
CHEMICAL COMMON NAME: Terbutol
PLANT: Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 11.2 and 22.4 kg/ha
APPLICATION METHODS: Granular application with calibrated 0.9 m-wide lawn spreader; preemergence application in July
EXPERIMENTAL CONDITIONS: Emory clay loam soil; 4 year experiment with fourth year used to determine recovery -- no herbicide application; randomized complete block design with 3 replications and a check; plots measured 0.9 by 4.8 m with 0.3-m border between plots; no border between replications; injury determined by sod loss and foliar damage; lowest rates of application halved, plots treated with high rates applied four times
EFFECTS: First year -- slight foliage browning, no sod loss; second year -- slight to moderate foliage injury, some sod loss; third year -- slight to moderate foliage injury with sod loss persisting in to fall dormancy; fourth year -- slight residual browning, sod loss persisted throughout year but recovery was complete
COMMENTS: Most persistent loss of sod occurred with bandane and terbutol
REFERENCE: Callahan, L.M., "Phytotoxicity of Herbicides to a Tifgreen Bermudagrass Green," Weed Sci. 24(1):92-98(1976).

<3050>
CHEMICAL NAME: Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-, methylcarbamate
CHEMICAL COMMON NAME: Terbutol
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Bluegrass, annual (POA ANNUA); Parsley-piert (ALCHEMILLA MICROCORPA); Speedwell, corn (VERONICA ARVENSIS); Clover, hop (TRIFOLIUM AGARIUM); Bermudagrass, common (CYNODON DACTYLON); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 11.2 kg/ha
APPLICATION METHODS: Preemergence spray; broadcast application in 376 l./ha water
EXPERIMENTAL CONDITIONS: 3-year test on golf courses, 1-year test at Georgia Experiment Station; loam, sandy clay loam, and sandy loam soils; DCPA, benefin, terbutol, bensulide used as summer chemical checks, pronamide, DCPA, and terbutol used as winter chemical checks; 1.5 by 3.0 m plots, randomized complete block design with 4 replications; summer tests--crabgrass control in turfgrass; winter tests--control of annual bluegrass, parsley-piert, corn speedwell and hop clover; visual ratings
EFFECTS: 76% avg. crabgrass control for 10 years (28-98% range); no significant effect on bluegrass or bermudagrass; annual bluegrass control--3 years, 74, 75 and 99%; parsley-piert control--3 years 0, 8 and 90%; corn speedwell control--3 years, 100, 88, and 100%; hop clover control--2 years, 58 and 75%
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<3051>
<3051>
CHEMICAL NAME: Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-, methylcarbamate
CHEMICAL COMMON NAME: Terbutol
PLANT: Bermudagrass, common (CYNODON DACTYLON); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Preemergence broadcast treatment in 40 gpa
EXPERIMENTAL CONDITIONS: 3-year experiment; Cecil sandy loam; application in July, August, September, and October of all 3 years (1971-1973); 5 X 10 ft plots, split-plot design--dates of treatment as main plots, herbicide treatments as subplots with 4 replications; ratings made year following treatment
EFFECTS: Unsatisfactory crabgrass control, greatest control in October (53%)
COMMENTS: No mention of bermudagrass toxicity
REFERENCE: Johnson, B.J., "Crabgrass Control in Common Bermudagrass Turf from Herbicides Applied the Previous Year," Ga. Agric. Res. 17(2):17-18 (1975).

<3052>
CHEMICAL NAME: Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-, methylcarbamate
CHEMICAL COMMON NAME: Terbutol
PLANT: Centipede grass (EREMOCHLOA OPHIUROIDES); Bermudagrass, Tifton (CYNODON sp.); Bermudagrass (CYNODON sp.); Zoysiagrass (ZOYSIA JAPONICAA); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 11.2 kg/ha
APPLICATION METHODS: Preemergence spray; 376 l./ha except benefin which was mixed with sand and applied by hand
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy clay loam; turfgrass sprig-planted; herbicides applied 2 to 3 days after planting; time period--1972 to 1974; evaluation time--16.5 mo
EFFECTS: Slight to moderate reduction of turfgrasses with moderate control of grass weeds and slight control of broadleafs
COMMENTS: Bensulide only herbicide that satisfactorily controlled grassy weeds during first growing season both years; turfgrass generally grew as well or better in untreated than treated plots
REFERENCE: Johnson, B.J., "Minimal Herbicide Treatments on the Establishment of Four Turfgrasses,," Agron. J. 67(1):786-789 (1975).

<3053>
CHEMICAL NAME: Phenol, 3-(1-ethylpropyl)-, methylcarbamate, mixt. with 3-(1-methylbutyl)phenyl methylcarbamate
CHEMICAL COMMON NAME: Bux
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1, 2, and 4 lb/A
APPLICATION METHODS: In 7-in. bands over row and in drill hole with seed
EXPERIMENTAL CONDITIONS: Plano silt loam; plots--single 40-in. rows 40 ft long, randomized block design and 3 or 4 replicates; field studies; yields determined as indication of growth
EFFECTS: No influence on corn yield from 7-in. band application; when placed in seed drill hold, 33.6% yield reduction at 4 lb/A, significant yield losses at 1 and 2 lb/A also
COMMENTS: Proper placement of insecticide important
REFERENCE: Apple, J.W., "Response of Corn to Granular Insecticides Applied to the Row at Planting," J. Econ. Entomol. 64(5):1208-1211 (1971).

<3054>
CHEMICAL NAME: Phenol, 3-(1-ethylpropyl)-, methylcarbamate, mixt. with 3-(1-methylbutyl)phenyl methylcarbamate
CHEMICAL COMMON NAME: Bux
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 2.0 to 8.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight to severe leaf damage with no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3055>
CHEMICAL NAME: Phenol, 3-(1-methylethyl)-, methylcarbamate
CHEMICAL COMMON NAME: UC-10854
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 75% WP formulation and 1 lb/gal technical UC 10854 EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Negligible foliage injury
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3056>
CHEMICAL NAME: Phenol, 3-(1-methylpropyl)-, methylcarbamate
CHEMICAL COMMON NAME: RE-5305
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 2.0 to 8.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight to severe leaf damage at all rates with considerable stand reduction at highest rate
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3057>
CHEMICAL NAME: Phenol, 3-keto-carbofuran-
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 and 10.0 mM
APPLICATION METHODS: Addition to sterile solution
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated pea stem segments; radiolabeled IAA utilized
EFFECTS: Growth stimulation and inhibited IAA decarboxylation
COMMENTS: Carbofuran phenol and 3-hydroxy-carbofuran phenol found inhibitory to indole-3-acetic acid oxidase; metabolites stimulated plant growth in pea stem segment assay with low concentration of IAA
REFERENCE: Lee, T.T., "Insecticide-Plant Interaction: Carbofuran Effect on Indole-3-Acetic Acid Metabolism and Plant Growth," Life Sci. 18(2):205-210 (1976).

<3058>
CHEMICAL NAME: Phenol, 3-methyl-4(methylthio)-, methylcarbamate
CHEMICAL COMMON NAME: Bayer 32651
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Growth reduction at 0.25%; foliar damage at 0.25 and 0.125% concentrations
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3059>
CHEMICAL NAME: Phenol, 3,5-dimethyl-4-(methylthio)-, methylcarbamate
CHEMICAL COMMON NAME: Methiocarb
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 50% WP of methiocarb (Bayer 37344)
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No injury
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125 and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3060>
CHEMICAL NAME: Phenol, 3,5-dimethyl-4-(methylthio)-, methylcarbamate
CHEMICAL COMMON NAME: Bay 37341
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Moderate leaf damage and considerable stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3061>
<3061>
CHEMICAL NAME: Phenol, 4-(di-2-propenylamino)-3,5-dimethyl-, methylcarbamate (ester)
CHEMICAL COMMON NAME: Allyxycarb
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml applications to 4 plants; 50% WP of allyxycarb (Bayer 50282)
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Chlorosis and burning of leaves at 0.25% concentration
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125 and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3062>
CHEMICAL NAME: Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester)
CHEMICAL COMMON NAME: Zectran
PLANT: Cascara (RHAMNUS PURSHIANA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Florida beauty (DRACENA GODSEFFIANA); Holly, burford (ILLEX CORNUTA); Juniper (JUNIPERUS CHINENSIS); Privet (LIGUSTRUM JAPONICUM); Prayer plant (MARANTA LEUCONEURA); Red nerve plant (MARANTA RUBRANEURAL); Fluffy ruffle (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Podocarpus (PODOCARPUS MAKI); Golden pothos (SCINDAPSUS AUREUS); Nephritis (SYNGONIUM PODOPHYLLUM)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A; EC; sticker-spreader (Plyac)
APPLICATION METHODS: Postemergence spray to run-off; 3X applications at weekly intervals
EXPERIMENTAL CONDITIONS: Greenhouse study; temperatures--80 to 85 F (day) and 62 to 68 F (night); RH--60 to 95%; evaluation time--1 wk
EFFECTS: No injury to most plants, moderate injury to golden pothos at 2X (1.0 lb/A) and slight injury of shefflera, fluffy ruffle, and peperomia; no injury of other plants
COMMENTS: Almost one-half plants exhibited some phytotoxic response; most sensitive plants were schefflera, fluffy ruffle fern, peperomia, and golden pothos; most toxic chemicals were plictran and omite and least phytotoxic materials were zectran and pirimor
REFERENCE: Short, D.E. and D.B. McConnell, "Pesticide Phytotoxicity to Ornamental Plants," Proc. Fla. St. Hort. Soc. 86:439-442 (1974).

<3063>
CHEMICAL NAME: Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester)
CHEMICAL COMMON NAME: Mexacarbate
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% WP formulation and 2 lb/gal technical mexacarbate (Zectran) EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Leaf edge necrosis with 0.25 and 0.125% emulsion and 0.25% WP; no effect on growth
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3064>
CHEMICAL NAME: Phenol, 4-(phenylmethyl)-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Moderate damage of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<3065>
CHEMICAL NAME: Phenol, 4-bromo-
CHEMICAL COMMON NAME: p-Bromophenol
PLANT: Couchgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2) M, 10(-3) M, and 10(-4) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days

<3065> CONT.
EFFECTS: Poor control of shoot emergence at all application rates
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch, pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3066>
CHEMICAL NAME: Phenol, 4-chloro-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 250 mg/l.
EXPERIMENTAL CONDITIONS: Lateral roots used; mitotic index of control, 112
EFFECTS: Percentage of abnormal mitotic cells, 2.02%; mitotic index, 90
COMMENTS: Induced types of abnormalities--(1) disturbed type (disturbed metaphases, prophase-metaphases and disturbed ana-telophases) (2) lagging chromosomes, (3) stickiness, (4) fragmentation, and (5) cytomixis; tables in paper indicate percentages of each
REFERENCE: Amer, S.M. and E.M. Ali, "Cytological Effects of Pesticides IV. Mitotic Effects of Some Phenols," Cytologia 34:533-540 (1969).

<3067>
CHEMICAL NAME: Phenol, 4-methyl-2,6-dinitro-
CHEMICAL COMMON NAME: DNPC
PLANT: Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--10% or less root and no stem inhibition at 10 ppm, 61-90% root and 10% or less stem inhibition at 100 ppm, complete root and complete stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives with Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 22(3):345-352 (1968).

<3068>
CHEMICAL NAME: Phenol, 4-methyl-3-(1-methylpropyl)-, methylcarbamate
CHEMICAL COMMON NAME: Bay 62862
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 and 8.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Moderate leaf damage at both rates and stand reduction at higher rate
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3069>
CHEMICAL NAME: Phenol, 4-nitro-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 250, 500, and 1000 mg/l.
EXPERIMENTAL CONDITIONS: Lateral roots used; mitotic index of control, 99
EFFECTS: Percentage of abnormal mitotic cells--8.40, 6.58, and 4.31% at 1000, 500, and 250 mg/l., respectively; mitotic index--62, 76, and 85 at 1000, 500, and 250 mg/l., respectively
COMMENTS: Induced types of abnormalities--(1) disturbed type (disturbed metaphases, prophase-metaphases and disturbed ana-telophases), (2) lagging chromosomes, (3) stickiness, (4) fragmentation, and (5) cytomixis; tables in paper indicate percentages of each
REFERENCE: Amer, S.M. and E.M. Ali, "Cytological Effects of Pesticides IV. Mitotic Effects of Some Phenols," Cytologia 34:533-540 (1969).

<3070>
CHEMICAL NAME: Phenol, 4-nitro-3-(trifluoromethyl)-
CHEMICAL COMMON NAME: TFM
PLANT: Elodea (ELODEA CANADENSIS) ; Myriophyllum (MYRIOPHYLLUM SPICATUM)
EXPERIMENTAL DOSE: 5.0 to 35.0 mg/l
APPLICATION METHODS: Addition to water (nutrient medium)
EXPERIMENTAL CONDITIONS: Environmental chamber; artificial recirculating stream; light intensity--350 to 450 ft-c, temperature--17.5-18 C; Hoagland's nutrient solution; exposure time--one to 24 hr; evaluation time--two wk
EFFECTS: Inhibited growth and production of vegetative shoots of both species
COMMENTS: TFM inhibited growth and production of vegetative shoots of ELODEA CANADENSIS in concentrations greater than 5.0 mg/l; exposure periods in excess of 1 hour produced significant reductions in production

<3070>
<3070> CONT.
of plants exposed to increasingly high concentrations; Myriophyllum SPICATUM more susceptible
REFERENCE: Maki, A.W. and H.E. Johnson, "The Influence of Larval Lampricide (TFM:3-Trifluormethyl-4-Nitrophenol) on Growth and Production of Two Species of Aquatic Macrophytes, ELODEA CANADENSIS (Michx.) Planchon and MYRIOPHYLLUM SPICATUM L.," Bull. Environ. Cont. & Tox. 17(1):57-65 (1977).

<3071>
CHEMICAL NAME: Phenol, 4-phenylmethylamino-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Moderate damage of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<3072>
CHEMICAL NAME: Phenol, 4-phenylmethylamino-
CHEMICAL COMMON NAME: Atlacide
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 1200 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control with no regrowth (3 mo)
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<3073>
CHEMICAL NAME: Phenol, 4,4'-(1-methylethylidene)di-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse effect on peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<3074>
CHEMICAL NAME: Phenol, 4,6-dinitro-o-sec-butyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: Slight control at 20.0 lb rate
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<3075>
CHEMICAL NAME: Phenol, 6-nitro-2,4-dichloro-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control

<3075> CONT.
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<3076>
CHEMICAL NAME: Phenothiazine-10-propanamine, 2-chloro-N,N-dimethyl-10H-, monohydrochloride
CHEMICAL COMMON NAME: Chlorpromazine hydrochloride
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1,5, and 10 ppm
APPLICATION METHODS: 4 days growth exposed to test solution
EXPERIMENTAL CONDITIONS: 25 seeds placed in each dilution then subjected to 10-15 sec of vacuum; seeds then transferred onto copper screens supported by styrofoam rings and floated on each solution; seedlings grown for 4 days with 14 hr of supplemental light; shoots measured and mid-anaphase cells studied
EFFECTS: 50% growth reduction at 10 ppm; abnormal nuclear membrane observed with opening at one polar end
COMMENTS: Reason for membrane opening not known; hypothesis that hole in nuclear membrane interferes with mitotic cell division, thus growth reduction
REFERENCE: Adams, J.D., "Growth Effects of Tranquilizing Agents Containing Phenothiazine Derivatives on Barley Seedling," Pharmacology 13:137-142(1975).

<3077>
CHEMICAL NAME: Phenothiazine-10-propanamine,N,N-dimethyl-10H-, monohydrochloride
CHEMICAL COMMON NAME: Promazine hydrochloride
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1,5, and 10 ppm
APPLICATION METHODS: 4 days growth exposed to test solution
EXPERIMENTAL CONDITIONS: 25 seeds placed in each dilution then subjected to 10-15 sec of vacuum; seeds then transferred onto copper screens supported by styrofoam rings and floated on each solution; seedlings grown for 4 days with 14 hr of supplemental light; shoots measured and mid-anaphase cells studied
EFFECTS: 50% growth reduction at 10 ppm; abnormal nuclear membrane observed with opening at one polar end
COMMENTS: Reason for membrane opening not known; hypothesis that hole in nuclear membrane interferes with mitotic cell division, thus growth reduction
REFERENCE: Adams, J.D., "Growth Effects of Tranquilizing Agents Containing Phenothiazine Derivatives on Barley Seedling," Pharmacology 13:137-142(1975).

<3078>
CHEMICAL NAME: Phenoxylene
CHEMICAL COMMON NAME: Phenoxylene
PLANT: Bindweed, field (CONVOLVULUS ARVENSIS); (CRESSA CRETICA); Nutsedge, purple (CYPERUS ROTUNDUS); Wheat (TRITICUM AESTIVUM); Clover, Egyptian (TRIFOLIUM ALEXANDRIANUM); Mustard (BRASSICA sp.); Goosefoot (CHENOPODIUM sp.)
EXPERIMENTAL DOSE: 1.5, 2.0, and 5.0 pints/A
APPLICATION METHODS: Preplanting and post-sowing sprays at rate of 48 gpa
EXPERIMENTAL CONDITIONS: Preplanting experiment; postsowing experiment--randomized block design with 4 replications, 1/8 acre plots; field trials--more elaborate than above tests, split plot design with 3 replications, times of application were main plots, herbicides were subplots of 1/8 acre each, postemergence treatment
EFFECTS: Preplanting test--C. ARVENSIS and C. CRETICA showed yellowing and scorching, no effect on C. ROTUNDUS, all weeds returned to prespraying condition; post-sowing experiment--effective against all weeds except C. CRETICA and C. ROTUNDUS; field trials--weed population significantly reduced by application, later increased but still lower at harvest than in untreated check, the later the application after sowing the better the weed control at harvest; no deleterious effect on wheat seedlings
COMMENTS: Greater yield when sprayed at 6 to 8 weeks after sowing in comparison with 3 weeks after sowing; the herbicide legumex less effective than other tested herbicides; phenoxylene the safest herbicide tested
REFERENCE: Kausar, A.G. and A. Ghaffer, "Trials of Selective Herbicides for Weed Control in Wheat," Pak. J. Bot. 7(2):149-159 (1975).

<3079>
CHEMICAL NAME: Phenyl, mercury (2+) salt
CHEMICAL COMMON NAME: Phenyl mercury
PLANT: Oat, wild (AVENA FATUA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 2 X 10(-6) and 7 X 10(-5) M
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; oat and pea coleoptile assays
EFFECTS: Inhibited growth
COMMENTS: Arsenite, parachloromercuribenzoate, and phenylmercuric salts inhibited growth; inhibitions differed from those caused by iodoacetate in that they were not prevented or reversed by malate or other organic acids; difference ascribed to greater affinity of enzyme for these substances than for iodoacetate
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. II. The Action of Several Enzyme Inhibitors on the Growth of the AVENA Coleoptile and on PISUM Internodes," Am. J. Bot. 36:214-221 (1949).

<3080>
<3080>
CHEMICAL NAME: Phordene
CHEMICAL COMMON NAME: Phordene
PLANT: Bindweed, field (CONVOLVULUS ARVENSIS); (CRESSA CRETICA); Nutsedge, purple (CYPERUS ROTUNDUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.5 and 3 pints/A
APPLICATION METHODS: Preplanting sprays at rate of 48 gpa
EXPERIMENTAL CONDITIONS: Preplanting treatments
EFFECTS: C. ARVENSIS and C. CRETICA showed yellowing and scorching; no effect on C. ROTUNDUS; all weeds returned to prespraying condition
REFERENCE: Kausar, A.G. and A. Ghaffer, "Trials of Selective Herbicides for Weed Control in Wheat," Pak. J. Bot. 7(2):149-159 (1975).

<3081>
CHEMICAL NAME: Phordester
CHEMICAL COMMON NAME: Phordester
PLANT: Bindweed, field (CONVOLVULUS ARVENSIS); (CRESSA CRETICA); Nutsedge, purple (CYPERUS ROTUNDUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.5 and 3 pints/A
APPLICATION METHODS: Preplanting sprays at rate of 48 gpa
EXPERIMENTAL CONDITIONS: Preplanting treatments
EFFECTS: C. ARVENSIS and C. CRETICA showed yellowing and scorching; no effect on C. ROTUNDUS; all weeds returned to prespraying condition
REFERENCE: Kausar, A.G. and A. Ghaffer, "Trials of Selective Herbicides for Weed Control in Wheat," Pak. J. Bot. 7(2):149-159 (1975).

<3082>
CHEMICAL NAME: Phosphine
CHEMICAL COMMON NAME: Phosphine
PLANT: Wheatgrass, western (AGROPYRON SMITHII); Bluestem, big (ANDROPOGON GERARDI); Bluestem, sand (ANDROPOGON HALLII); Bluestem (ANDROPOGON ISCHAEMUM); Bluestem, little (ANDROPOGON SCOPARIUS); Grama, sideoats (BOUTELOUA CURTIPENDULA); Switchgrass (PANICUM VIRGATUM); Indian grass (SORGHASTRUM NUTANS); Gamagrass, Eastern (TRIPSICUM DACTYLOIDES)
EXPERIMENTAL DOSE: 3920-4720 ppm (120 hr)
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25.6 to 26.7 C
EFFECTS: No adverse effect on germination of any test grass seeds
COMMENTS: Germination not altered when seeds exposed to high concentrations of phosphine gas for 5 days; phosphine may be used to fumigate stored grass seed without adversely affecting seed germination
REFERENCE: White, G.D. and E.T. Jacobson, "Phosphine Fumigation: Effects on the Germination of Grass Seed," J. Econ. Ent. 65(5):1523-1524 (1972).

<3083>
CHEMICAL NAME: Phosphine oxide, P-1-aziridinyl-N,N,N'N'-tetramethylamino-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 5 x 10(-2) M
APPLICATION METHODS: Roots placed in solutions for 2 hr in dark at 19-20 C
EXPERIMENTAL CONDITIONS: 1-2 cm long lateral roots of 9-day-old seedlings; test compounds dissolved in mixture of 1 part distilled water and 1 part Uppsala tap water (pH 7.2); seedlings transferred to tap water for 24 hr recovery period at 19-20 C in dark; squash preparations made of terminal 1.5 mm root portion in 45% acetic acid
EFFECTS: 46.6 chromosome aberrations per 100 cells
COMMENTS: Aberrations--chromatid breaks, isochromatid breaks, and complete and incomplete chromatid exchanges; effects on Chinese hamster cells also studied and compared
REFERENCE: Sturelid, S., "Chromosome-Breaking Capacity of Tepa and Analogues in VICIA FABA and Chinese Hamster Cells," Hereditas 68:255-276 (1971).

<3084>
CHEMICAL NAME: Phosphine oxide, P,P-bis(1-aziridinyl)-N-butylamino-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 10(-3) M
APPLICATION METHODS: Roots placed in solutions for 2 hr in dark at 19-20 C
EXPERIMENTAL CONDITIONS: 1-2 cm long lateral roots of 9-day-old seedlings; test compounds dissolved in mixture of 1 part distilled water and 1 part Uppsala tap water (pH 7.2); seedlings transferred to tap water for 24 hr recovery period at 19-20 C in dark; squash preparations made of terminal 1.5 mm root portion in 45% acetic acid
EFFECTS: 49 chromosome aberrations per 100 cells
COMMENTS: Aberrations--chromatid breaks, isochromatid breaks, and complete and incomplete chromatid exchanges; effects on Chinese hamster cells also studied and compared
REFERENCE: Sturelid, S., "Chromosome-Breaking Capacity of Tepa and Analogues in VICIA FABA and Chinese Hamster Cells," Hereditas 68:255-276 (1971).

<3085>
CHEMICAL NAME: Phosphine oxide, P,P-bis(1-aziridinyl)-N-ethylamino-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 10(-3) M
APPLICATION METHODS: Roots placed in solutions for 2 hr in dark at 19-20 C
EXPERIMENTAL CONDITIONS: 1-2 cm long lateral roots of 9-day-old seedlings; test compounds dissolved in mixture of 1 part distilled water and 1 part Uppsala tap water (pH 7.2); seedlings transferred to tap water for 24 hr recovery period at 19-20 C in dark; squash preparations made of terminal 1.5 mm root

<3085> CONT.
portion in 45% acetic acid
EFFECTS: 49.5 chromosome aberrations per 100 cells
COMMENTS: Aberrations--chromatid breaks, isochromatid breaks, and complete and incomplete chromatid exchanges; effects on Chinese hamster cells also studied and compared
REFERENCE: Sturelid, S., "Chromosome-Breaking Capacity of Tepa and Analogues in VICIA FABA and Chinese Hamster Cells," Hereditas 68:255-276 (1971).

<3086>
CHEMICAL NAME: Phosphine oxide, P,P-bis(1-aziridinyl)-N-isopropylamino-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 10(-3) M
APPLICATION METHODS: Roots placed in solutions for 2 hr in dark at 19-20 C
EXPERIMENTAL CONDITIONS: 1-2 cm long lateral roots of 9-day-old seedlings; test compounds dissolved in mixture of 1 part distilled water and 1 part Uppsala tap water (pH 7.2); seedlings transferred to tap water for 24 hr recovery period at 19-20 C in dark; squash preparations made of terminal 1.5 mm root portion in 45% acetic acid
EFFECTS: 51 chromosome aberrations per 100 cells
COMMENTS: Aberrations--chromatid breaks, isochromatid breaks, and complete and incomplete chromatid exchanges; effects on Chinese hamster cells also studied and compared
REFERENCE: Sturelid, S., "Chromosome-Breaking Capacity of Tepa and Analogues in VICIA FABA and Chinese Hamster Cells," Hereditas 68:255-276 (1971).

<3087>
CHEMICAL NAME: Phosphine oxide, P,P-bis(1-aziridinyl)-N-methylamino-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 10(-3) M
APPLICATION METHODS: Roots placed in solutions for 2 hr in dark at 19-20 C
EXPERIMENTAL CONDITIONS: 1-2 cm long lateral roots of 9-day-old seedlings; test compounds dissolved in mixture of 1 part distilled water and 1 part Uppsala tap water (pH 7.2); seedlings transferred to tap water for 24 hr recovery period at 19-20 C in dark; squash preparations made of terminal 1.5 mm root portion in 45% acetic acid
EFFECTS: 52 chromosome aberrations per 100 cells
COMMENTS: Aberrations--chromatid breaks, isochromatid breaks, and complete and incomplete chromatid exchanges; effects on Chinese hamster cells also studied and compared
REFERENCE: Sturelid, S., "Chromosome-Breaking Capacity of Tepa and Analogues in VICIA FABA and Chinese Hamster Cells," Hereditas 68:255-276 (1971).

<3088>
CHEMICAL NAME: Phosphine oxide, P,P-bis(1-aziridinyl)-N-propylamino-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 10(-3) M
APPLICATION METHODS: Roots placed in solutions for 2 hr in dark at 19-20 C
EXPERIMENTAL CONDITIONS: 1-2 cm long lateral roots of 9-day-old seedlings; test compounds dissolved in mixture of 1 part distilled water and 1 part Uppsala tap water (pH 7.2); seedlings transferred to tap water for 24 hr recovery period at 19-20 C in dark; squash preparations made of terminal 1.5 mm root portion in 45% acetic acid
EFFECTS: 49.5 chromosome aberrations per 100 cells
COMMENTS: Aberrations--chromatid breaks, isochromatid breaks, and complete and incomplete chromatid exchanges; effects on Chinese hamster cells also studied and compared
REFERENCE: Sturelid, S., "Chromosome-Breaking Capacity of Tepa and Analogues in VICIA FABA and Chinese Hamster Cells," Hereditas 68:255-276 (1971).

<3089>
CHEMICAL NAME: Phosphine oxide, P,P-bis(1-aziridinyl)-N,N-dimethylamino-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 7.5 x 10(-4) and 10(-3) M
APPLICATION METHODS: Roots placed in solutions for 2 hr in dark at 19-20 C
EXPERIMENTAL CONDITIONS: 1-2 cm long lateral roots of 9-day-old seedlings; test compounds dissolved in mixture of 1 part distilled water and 1 part Uppsala tap water (pH 7.2); seedlings transferred to tap water for 24 hr recovery period at 19-20 C in dark; squash preparations made of terminal 1.5 mm root portion in 45% acetic acid
EFFECTS: 22.7 and 26.3 chromosome aberrations per 100 cells at 7.5 x 10(-4) and 10(-3) M, respectively
COMMENTS: Aberrations--chromatid breaks, isochromatid breaks, and complete and incomplete chromatid exchanges; effects on Chinese hamster cells also studied and compared
REFERENCE: Sturelid, S., "Chromosome-Breaking Capacity of Tepa and Analogues in VICIA FABA and Chinese Hamster Cells," Hereditas 68:255-276 (1971).

<3090>
CHEMICAL NAME: Phosphine oxide, tris(dimethylamino)-
CHEMICAL COMMON NAME: Hempa
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 10(-1) M
APPLICATION METHODS: Roots placed in solutions for 2 hr in dark at 19-20 C
EXPERIMENTAL CONDITIONS: 1-2 cm long lateral roots of 9-day-old seedlings; test compounds dissolved in mixture of 1 part distilled water and 1 part Uppsala tap water (pH 7.2); seedlings transferred to tap water for 24 hr recovery period at 19-20 C in dark; squash preparations made of terminal 1.5 mm root portion in 45% acetic acid

<3090>
<3090> CONT.
EFFECTS: No chromosome aberrations
COMMENTS: Aberrations--chromatid breaks, isochromatid breaks, and complete and incomplete chromatid exchanges; effects on Chinese hamster cells also studied and compared
REFERENCE: Sturelid, S., "Chromosome-Breaking Capacity of Tepa and Analogues in VICIA FABA and Chinese Hamster Cells," Hereditas 68:255-276 (1971).

<3091>
CHEMICAL NAME: Phosphine oxide, tris(1-aziridinyl)-
CHEMICAL COMMON NAME: Tepa
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 7.5 x 10(-4) and 10(-3) M
APPLICATION METHODS: Roots placed in solutions for 2 hr in dark at 19-20C
EXPERIMENTAL CONDITIONS: 1-2 cm long lateral roots of 9-day-old seedlings; test compounds dissolved in mixture of 1 part distilled water and 1 part Uppsala tap water (pH 7.2); seedlings transferred to tap water for 24 hr recovery period at 19-20C in dark; squash preparations made of terminal 1.5 mm root portion in 45% acetic acid
EFFECTS: 7.5 x 10(-4) M--32.2 chromosome abberations per 100 cells; 10(-3) M--50.2 chromosome abberrations per 100 cells
COMMENTS: Aberrations--chromatid breaks, isochromatid breaks, and complete and incomplete chromatid exchanges; effects on Chinese hamster cells also studied and compared
REFERENCE: Sturelid, S., "Chromosome-Breaking Capacity of Tepa and Analogues in VICIA FABA and Chinese Hamster Cells," Hereditas 68:255-276 (1971).

<3092>
CHEMICAL NAME: Phosphite, tris(4-chloro-2-methylphenoxyethyl)-
CHEMICAL COMMON NAME: B-528
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 5.70 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<3093>
CHEMICAL NAME: Phosphonamidothioic acid, P-(chloromethyl)-N-(1-methylethyl)-, O-(2,4-dichlorophenyl)ester
CHEMICAL COMMON NAME: Isophos-2
PLANT: Rice (LEERSIA ORYZOIDES); Millet, rice (ECHINOCHLOA ORYZICOLA)
EXPERIMENTAL DOSE: 0.5, 1.0, 2.0, 4.0, and 6.0 kg/ha
APPLICATION METHODS: Preplanting, preemergence, and postemergence treatments
EXPERIMENTAL CONDITIONS: Greenhouse and plot studies
EFFECTS: Minor rice injury, primarily with preemergence treatments; 100% preplanting and preemergence rice millet control at 2 and 4 kg/ha; 54% rice millet control with postemergence 4 lb/A treatment
COMMENTS: Preplanting surface treatments found to be most effective of application methods
REFERENCE: Melnikov, N.N., L.D. Stonov, A.F. Grapov, and T.A. Sergeyeva, "New Herbicides of the Isophos Group: Chemistry, Biological Activity, Mode of Action," Pesticides, Supp. Vol III:708-712 (1974).

<3094>
CHEMICAL NAME: Phosphonamidothioic acid, P-(chloromethyl)-N-(1-methylethyl)-, O-(2,4-dichlorophenyl)ester
CHEMICAL COMMON NAME: Isophos-3
PLANT: Rice (LEERSIA ORYZOIDES); Cotton (GOSSYPIUM HIRSUTUM); Carrot (DAUCUS CAROTA); Soybean (GLYCINE MAX); Cucumber (CUCUMIS SATIVUS); Barley (HORDEUM VULGARE); Cabbage (BRASSICA OLERACEA); Radish (RAPHANUS SATIVUS); Wheat (TRITICUM AESTIVUM); Oat (AVENA SATIVA); Oat, wild (AVENA FATUA); Pennycress, field (THLASPI ARVENSE); Tomato (LYCOPERSICON ESCULENTUM); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Millet, rice (ECHINOCHLOA ORYZICOLA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Grass, bristle (SETARIA sp.); Knotweed (POLYGONUM sp.)
EXPERIMENTAL DOSE: 1 to 3, 4, and 8 kg/ha
APPLICATION METHODS: Preplanting, preemergence, and postemergence treatments
EXPERIMENTAL CONDITIONS: Greenhouse and plot studies
EFFECTS: Rice, cotton, carrot, soybean, cucumber, tomato seedlings, cabbage seedlings, barley, and knotweed resistant at 8 kg/ha; cabbage seeds, radish, wheat, oat, wild oat, and pennycress not damaged at 4 kg/ha; tomato seeds, lambs'-quarters, redroot pigweed, bentgrass, rice millet, barnyardgrass, and bristlegrass killed at 1 to 3 kg/ha
COMMENTS: Preplanting surface treatments found to be most effective of application methods
REFERENCE: Melnikov, N.N., L.D. Stonov, A.F. Grapov, and T.A. Sergeyeva, "New Herbicides of the Isophos Group: Chemistry, Biological Activity, Mode of Action," Pesticides, Supp. Vol III:708-712 (1974).

<3095>
CHEMICAL NAME: Phosphonamidothioic acid, P-(chloromethyl)-N-(1-methylpropyl)-, O-(2,4-dichlorophenyl) ester
CHEMICAL COMMON NAME: Isophos-1
PLANT: Rice (LEERSIA ORYZOIDES); Millet, rice (ECHINOCHLOA ORYZICOLA)
EXPERIMENTAL DOSE: 0.5, 1.0, 2.0, 4.0, and 6.0 kg/ha
APPLICATION METHODS: Preplanting, preemergence, and postemergence treatments
EXPERIMENTAL CONDITIONS: Greenhouse and plot studies
EFFECTS: Minor rice injury, primarily with preemergence treatment; 100% rice millet control with preplanting and preemergence treatments at 2 and 4 kg/ha; 56% rice millet control at 4 kg/ha with postemergence treatment
COMMENTS: Preplanting surface treatments found to be most effective of application methods
REFERENCE: Melnikov, N.N., L.D. Stonov, A.F. Grapov, and T.A. Sergeyeva, "New Herbicides of the Isophos Group: Chemistry, Biological Activity, Mode of Action," Pesticides, Supp. Vol III:708-712 (1974).

<3096>
CHEMICAL NAME: Phosphonate, ammonium ethyl carbanoyl-
CHEMICAL COMMON NAME: DPX-1108
PLANT: Chamise (ADENOSTOMA FASCICULATUM); Chamise, redshank (ADENOSTOMA SPARSIFOLIUM)
EXPERIMENTAL DOSE: 2.24 and 4.48 kg/ha
APPLICATION METHODS: Postemergence in 187 l./ha water with nonionic surfactant added; ammonium salt formulation
EXPERIMENTAL CONDITIONS: Five field tests, 4-year period; 30-year old chamise in experiment A, 3 to 4-year old chamise in other tests; randomized block design except experiment C; split-plot design for experiment C, application time as main plot and treatments as subplots, 29.7 m(2) subplot size; plot size for tests A, B, D, E, 40.9 M(2); visual injury evaluation 1 year after treatment, measured evaluation within 15 to 48 months after application
EFFECTS: 27 and 52% chamise control after 21 months at 2.24 and 4.48 kg/ha respectively, less control with spring application; no control of redshank chamise with either fall or spring treatment
COMMENTS: Foliage injury and canopy reduction also recorded
REFERENCE: Radosevich, S.R., W.L. Graves, and H.A. Agamalian, "Response of Two ADENOSTOMA Species to Several Herbicides," Weed Sci. 25(2):188-192 (1977).

<3097>
CHEMICAL NAME: Phosphonate, ethylhydrogen-1-propyl-
CHEMICAL COMMON NAME: NIA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha; 0.5% Biofilm added
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: Reduction in tuber numbers; no further adverse effects observed
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<3098>
CHEMICAL NAME: Phosphonate, ethylhydrogen-1-propyl-
CHEMICAL COMMON NAME: NIA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l./ha
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl-bromide-fumigated soil (Maverly loam); evaluation time--37 and 41 days; tubers recovered and weighed or replanted in vermiculite for further study
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<3099>
CHEMICAL NAME: Phosphonate, ethylhydrogen-1-propyl-
CHEMICAL COMMON NAME: NIA-10637
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<3100>
<3100>
CHEMICAL NAME: Phosphonic acid, (aminocarbonyl)-, monoethyl ester, mono-ammonium salt
CHEMICAL COMMON NAME: Krenite
PLANT: Maple, red (ACER RUBRUM); Ash, white (FRAXINUS AMERICANA); Persimmon, Eastern (DIOSPYROS VIRGINIANA); Hawthorn, red (CRATAEGUS sp.); Locust, black (ROBINIA PSEUDO-ACACIA); Oak, pin (QUERCUS PALUSTRIS); Birch (BETULA sp.); Redbud (CERCIS CANADENSIS); Cherry, wild; Gum, red (LIQUIDAMBAR STYRACIFLUA); Dogwood (CORNUS sp.); Pine (PINUS sp.); Hackberry (CELTIS sp.); Sourwood (OXYDENDRUM ARBOREUM); Maple (ACER sp.); Briar; Honeysuckle (LONICERA sp.); Gum, black (NYSSA SYLVATICA); Cottonwood, eastern (POPULUS DELTOIDES); Hickory (CARYA sp.); Oak (QUERCUS sp.); Oak, red (QUERCUS RUBRA); Oak, white (QUERCUS ALBA); Poplar, yellow (LIRIODENDRON TULIPIFERA)
EXPERIMENTAL DOSE: 3.0 to 9.0 lb/A; 4 oz/100 gal surfactant (DuPont WK)
APPLICATION METHODS: Postemergence spray; 250 gal/A
EXPERIMENTAL CONDITIONS: Field study; applications studied at different times of year
EFFECTS: Effective growth suppression and kill of most right-of-way brush, including trees; surfactant improved effectiveness considerably
COMMENTS: Suppression of all species except redbud and cherry; sweet gum, dogwood, pine, hackberry, sourwood, maple, briar, honeysuckle, black gum, poplar and hickory severely retarded to no bud development; survivors producing feathery, fasiculated rudimentary leaves; no oaks showed signs of survival; retardation and elimination of brush species permitted annual grasses and weeds to take over
REFERENCE: Welch, A.W., M.B. Weed, and C.W. Bingeman, "Control of Brush With a New Growth Regulator," Proc. S. Weed Sci. Soc. 27:245-250 (1974).

<3101>
CHEMICAL NAME: Phosphonic acid, (2-chloroehtyl)-
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 250 and 1000 mg/l. (dip) and 8 kg/ha (spray)
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Reduced sprouting at lower dip rate
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<3102>
CHEMICAL NAME: Phosphonic acid, (2-chloroethyl)-
CHEMICAL COMMON NAME: Ethephon
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS);Bermudagrass, common (CYNODON DACTYLON);Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 24, 240, 1200, and 2400 ppm.
APPLICATION METHODS: 5 sec immersion of intact plant in test solution
EXPERIMENTAL CONDITIONS: Greenhouse container culture; soil--Newe Yaar clay; evaluation time--4 and 6 wk
EFFECTS: Reduced shoot length of all test plants
COMMENTS: Effects varied from simulation to inhibition of aerial growth, increases in shoot number, and kill of plants
REFERENCE: Horowitz, M., "Effect of Growth Regulators on CYNODON DACTYLON (L.) Pers., SORGHUM HALEPENSE (L.) Pers., and CYPERUS ROTUNDUS L.," Weed Res. 12(1):11-20 (1972).

<3103>
CHEMICAL NAME: Phosphonic acid, (2-chloroethyl)-
CHEMICAL COMMON NAME: Ethephon
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS);Bermudagrass, common (CYNODON DACTYLON);Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 1.8 and 3.6 kg/ha
APPLICATION METHODS: Postemergence spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Greenhouse container culture; evaluation time--5 mo
EFFECTS: Inhibition of Sorghum shoot length at both rates; no adverse effect to other plants
COMMENTS: Effect of combinations of foliar spraying with ethephon, MH, flurecol or chlorflurecol followed after 2 days by spraying with the herbicides ddalapon or aminotriazole activated with ammonium thiocyanate, investigated; herbicides appllied alone had no marked effect but combinations generally more toxic; ethephon stimulated growth of C. DACTYLON but combination with dalapon was phytotoxic; MH sprayed alone and combinations of flurecol or chlorflurecol with dalapon or aminotriazole were highly inhibitory to S. HALEPENSE; none of the treatments completely inhibited regrowth of G. ROTUNDUS
REFERENCE: Horowitz, M., "Effect of Growth Regulators on CYNODON DACTYLON (L.) Pers., SORGHUM HALEPENSE (L.) Pers., and CYPERUS ROTUNDUS L.," Weed Res. 12(1):11-20 (1972).

<3104>
CHEMICAL NAME: Phosphonic acid, (2-chloroethyl)-
CHEMICAL COMMON NAME: Ethephon
PLANT: Nightshade, black (SOLANUM NIGRUM); Tomato (LYCOPERSICON ESCULENTUM); Thistle, Canada (CIRSIUM ARVENSE); Marigold, corn (CHRYSANTHEMUM SEGETUM)
EXPERIMENTAL DOSE: 100 mg/sq m
APPLICATION METHODS: Postemergence spray treatments; volume equivalent of sprayer, 100 mg/sq m
EXPERIMENTAL CONDITIONS: Seeds sown in 80% clay and 20% peat soil mixture; greenhouse germinated with 20 to 26 C daylight temperature and 18-20 C night temperature, 16-hr photoperiod; seedlings transplanted 10 to 21 days after sowing
EFFECTS: Nightshade--moderate (31-70%) deformation of leaves; tomato--mild (20-30%) necrosis and leaf deformation; thistle--mild leaf deformation; marigold--mild leaf deformation

<3104> CONT.
COMMENTS: Correlation of callus toxicity with seedling toxicity also reported--researchers note potential use of callus cultures to assess phytotoxicity
REFERENCE: Zilkah, S., P. R. Bocion, and J. Gressel, "Cell Cultures vs. Whole Plants For Measuring Phytotoxicity II. Correlatiions Between Phytotoxicity in Seedlings and Calli," Plant Cell Physiol. 18:657-670 (1977).

<3105>
CHEMICAL NAME: Phosphonic acid, (2-chloroethyl)-
CHEMICAL COMMON NAME: Ethrel
PLANT: Bladderwort (UTRICULARIA NIFLEXA)
EXPERIMENTAL DOSE: 1x10(-8) to 1x10(-6) M
APPLICATION METHODS: Addition to nutrient solution
EXPERIMENTAL CONDITIONS: Laboratory study; IN VITRO culture of shoot tips of U. INFLEXA in glass tubes or flasks containing White's nutrient medium; incubation temperature--28 C; photoperiod--18 hr; evaluation time--up to 10 wk
EFFECTS: Increased flowering at 1x10(-7) and 1x10(-8) M with commercial grade compound; results not repeated with purified compound; growth reduction noted at 1x10(-7) M of purified compound
COMMENTS: MEFA showed strong herbicidal effect and killed plants; AMO-1618 and coumarin inhibited apical as well as lateral bud growth; These three compouds and ABA, kinetin, BA, and zeatin unable to promote flowering under non-inductive conditions; BA stimulated growth in both long and short days; even in the latter conditions AMO-1618 and coumarin totally inhibited flowering, whereas ABA, kinetin and BA permitted 80-100 per cent of the cultures to flower; zeatin lowered the percentage of flowering cultures
REFERENCE: Ram, H.Y.M., H. Harada, and J.P. Nitsch, "Studies on Growth and Flowering in Axenic Cultures of Insectivorous Plants. III. Effects of Photoperiod, Ethrel, Morphactin and a Few Other Growth Substances and Metabolic Inhibitors on UTRICULARIA INFLEXA," Z. Pflanzenphysiol. Bd. 68(5):235-253 (1972).

<3106>
CHEMICAL NAME: Phosphonic acid, (2-chloroethyl)-
CHEMICAL COMMON NAME: Ethephon
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 400 g/ha (1000 ppm)
APPLICATION METHODS: Foliage spray, 400 l./ha
EXPERIMENTAL CONDITIONS: Tubers planted in pots, shoots emerged in 7-8 days; spraying after shoot establishment; pots placed in randomized blocks
EFFECTS: No control
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<3107>
CHEMICAL NAME: Phosphonic acid, (2-chloroethyl)-
CHEMICAL COMMON NAME: Ethephon
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 400 g/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha; 0.5% Biofilm added
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: No adverse effects observed
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<3108>
CHEMICAL NAME: Phosphonic acid, (2-chloroethyl)-
CHEMICAL COMMON NAME: G-996
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<3109>
CHEMICAL NAME: Phosphonic acid, (2-chloroethyl)-
CHEMICAL COMMON NAME: Ethrel
PLANT: Mesquite, honey (PROSOPIS JULIFLORA)
EXPERIMENTAL DOSE: 50 to 5000 ppm; with or without 10% glycerol
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Reduced numbers of mesquite flowers

<3109>
<3109> CONT.
COMMENTS: Ethrel applied in winter or early spring of 1972 decreased flower production during spring, 1972; ethrel applied as pretreatment, could be important in relation to chemical control of honey mesquite since herbicidal mesquite kills are inversely proportional to flower production
REFERENCE: Parsons, D.L. and R.E. Sosebee, "Influence of Ethrel on Phenological Development in Honey Mesquite," J. Range Manag. 27(2):165-166 (1974).

<3110>
CHEMICAL NAME: Phosphonic acid, (2,2,2-trichloro-1-hydroxyethyl)-, dimethyl ester
CHEMICAL COMMON NAME: Trichlorfon
PLANT: Bean, broad (VICIA FABA); Wheat (TRITICUM VULGARE)
EXPERIMENTAL DOSE: 0.1% solution
APPLICATION METHODS: Seeds soaked for 24 hr; 3-week-old plants sprayed
EXPERIMENTAL CONDITIONS: Morphological study--seeds washed after treatment, planted in pots with soil; shoot length measured after 2 weeks; cytological study--after germination, roots fixed in acetic alcohol (1:3) and stained using Feulgen squash technique
EFFECTS: Morphological study--no significant effect on percentage of seedling emergence and on shoot growth, inhibition of root growth and longitudinal division of root tip, no phytotoxicity from spraying; cytological effects--metaphases and anaphases normal
COMMENTS: Trade name, Dipterex
REFERENCE: Amer, S.M., "Comparative Study of Phytotoxicity and Cytological Effects of Dipterex and its O-Methyl Ether," Naturwissenschaften 53(11):278 (1966).

<3111>
CHEMICAL NAME: Phosphonic acid, (2,2,2-trichloro-1-hydroxyethyl)-, dimethyl ester
CHEMICAL COMMON NAME: Trichlorphon
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Pea, sweet (PISUM SATIVUM); Rice (LEERSIA ORYZOIDES); Corn (ZEA MAYS); Kenaf; Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 1, 5 and 10% solution
APPLICATION METHODS: Formulation--80% WP; application by soaking seeds in water dilutions
EXPERIMENTAL CONDITIONS: Seeds soaked for 1, 2, 3, 4 and 5 hours at 25 C; seeds transferred to planting dishes and left under standerized temperature--18 C for pea and radish, 30 C for others; 4 replicates for each treatment--100 rice seeds, 50 cotton, Kenaf and radish seeds, 25 pea and corn seeds; observations for germination and growth
EFFECTS: Germination--all plants showed decrease at 5 and 10%, maize and cotton had 0% germination at 10%, pea and radish showed 1 and 10% germination respectively at 10% at 5 hr, rice showed 71% at 5 hr at 10% and kenaf showed 96% at 10% at 5 hr; growth--all plants show decrease at 5 and 10%, maize, pea and cotton had 0% growth at 10%, other plants not as severely affected, rice showed greatest tolerance (64% growth at 10% at 5 hr)
COMMENTS: Growth and germination stimulation noticed, primarily at 1 and 5%
REFERENCE: Eid, A., B.P. Hanna, R.K. Mohammed, G.M. Amin, A.M. Ali and I.I. Guirguis, "Toxic Effect of Insecticides on Seeds," Agric. Res. Rev. 49(1):46-54 (1971).

<3112>
CHEMICAL NAME: Phosphonic acid, (2,2,2-trichloro-1-hydroxyethyl)-, dimethyl ester
CHEMICAL COMMON NAME: Trichlorphon
PLANT: Cabbage, Chinese (BRASSICA PEKINENSIS)
EXPERIMENTAL DOSE: 1.0 kg/ha
APPLICATION METHODS: Insecticidal spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; pollen collected at various times after application; evaluation time--6 hr to 21 da
EFFECTS: Significant pollen sterility for 6 hr to 14 da
COMMENTS: Most insecticides affected pollen viability only for first 4-5 days, except a few which affected it even up to 12 or 15 days
REFERENCE: Lal, O.P., "Insecticidal Sprayings Causing Pollen Sterility in Chinese Cabbage," Act. Agron. Acad. Scient. Hungar. 24:145-147 (1975).

<3113>
CHEMICAL NAME: Phosphonic acid, (2,2,2-trichloro-1-hydroxyethyl)-, dimethyl ester
CHEMICAL COMMON NAME: Trichlorfon
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.05, 0.1, and 0.2%
APPLICATION METHODS: As spray in 625 l./ha of spray material; postemergence on 42-day old crop
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: 0.05%--mild, 60% of leaves affected after 3 and 6 days; 0.1%--mild, 75% of leaves affected after 3 and 6 days; 0.2%--medium, 100% of leaves affected after 3 and 6 days
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadyan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<3114>
CHEMICAL NAME: Phosphonic acid, (2,2,2-trichloro-1-hydroxyethyl)-, dimethyl ester
CHEMICAL COMMON NAME: Trichlorfon
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 50% WP formulation and 4 lb/gal technical trichlorfon liquid formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No effect on growth from liquid formulation; WP formulation restricted growth and moderately injured foliage; liquid formulation caused some foliar injury but not as great as WP
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.P. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3115>
CHEMICAL NAME: Phosphonic acid, (2,2,2-trichloro-1-hydroxyethyl)-dimethyl ester
CHEMICAL COMMON NAME: Dylox
PLANT: Pine, Norfolk Island (ARAUCARIA EXCELSA); Copperleaf, Virginia (ACALYPHA VIRGINICA); Fern, Sprengeri asparagus (ASPARAGUS SPRENGERI); Schefflera (BRASSAIA ACTINOPHYLLA); Black olive; Palm, Madagascar (CHRYSALIDOCARPUS LUTESCENS); Sea grape (COCCOLOBA UVIFERA); Croton, gold dust (CODIAEUM VARIEGATUM); False aralia (LICYGOTHECA ELEGANTISSIMA); Dracaena, red edge (DRACAENA MARGINATA); Fig, Benjamin (FICUS BENJAMINA); Laurel, Cuban (FICUS RETUSA); Hibiscus, yellow (HIBISCUS CALYCINUS); Rose mallow (HIBISCUS ROSA-SINENSIS); Red ixora (IXORA COCCINEA); Jasmine, Wax (JASMINUM VOLUBILE); Privet (LIGUSTRUM JAPONICUM); Jessamine, Chalcas, orange (MURRAYA PANICULATA); Philodendron, self heading (PHILODENDRON SELLOUM); Pittosporum (PITTOSPORUM TOBIRO); Podocarpus (PODOCARPUS MACROPHYLLA); Viburnum (VIBURNUM SUSPENSUM); Palm, Christmas (VEITCHA MERILLI)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/100 gal(1X and 2X recommended rate); 2% EC
APPLICATION METHODS: Foliar spray; 3 applications once a week; sprayed to run-off at 40 psi
EXPERIMENTAL CONDITIONS: Field study; pot culture; slat shading; evaluation time--up to 5.5 wk
EFFECTS: Moderate damage of olive; slight damage of copperleaf, schefflera, fig, laurel, hibiscus, loxra, jasmine, privet, and viburnum; no damage to remaining plants
COMMENTS: Araucaria, asparagus, chrysalidocarpus, coccoloba, codiaeum, dizygotheca, dracaena, philodendron, pittosporum, podocarpus, and veitcha tolerated most or all of these materials with essentially no damage; acalypha, brassaia, bucida, ficus, hibiscus, ligustrum, and viburnum were sensitive to many or all of the materials; at recommended rates, diazinon and carbaryl produced the least number of phytotoxic symptoms on the least number of species
REFERENCE: Neel, P.L. and J.A. Reinert, "Phytotoxicity Evaluations of Ten Insecticides on Twenty-Three Species of Ornamental Plants Under Slat Shed Conditions," Proc. Fla. State Hortic. Soc. 88:586-590 (1976).

<3116>
CHEMICAL NAME: Phosphonic acid, (2,2,2-trichloro-1-hydroxymethyl)-, dimethyl ester
CHEMICAL COMMON NAME: Trichlorfon
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 2.5 kg/ha
APPLICATION METHODS: Hand-operated equipment application at 1 kg/200 l. water concentration; 80 and 5% WP and 2.5% G formulations
EXPERIMENTAL CONDITIONS: Field studies; spraying, 45 to 55 days after planting; 1 spraying unless rain or some other factor interfered
EFFECTS: Resistant, susceptible, and intermediate cultivars in terms of response to trichlorfon; susceptible cultivars--marked phytotoxicity and even death, some surviving plants showed panicle injury
COMMENTS: Single gene locus may be controlling cultivar response to trichlorfon
REFERENCE: Riccelli-Mattei, M., "Differential Phytotoxic Reaction of Sorghum Cultivars to Insecticides. I. Genetic Resistance to Trichlorfon," Crop Sci. 11(1):923-926 (1971).

<3117>
CHEMICAL NAME: Phosphonic acid, (2,2,2-trichloro-1-hydroxymethyl)-, dimethyl ester
CHEMICAL COMMON NAME: Trichlorfon
PLANT: Clover, sweet (MELILOTUS sp.); Zebra plant (APHELANDRA SQUARROSA)
EXPERIMENTAL DOSE: 5, 50 and 500 ppm
APPLICATION METHODS: Powder prepared from granular formulation
EXPERIMENTAL CONDITIONS: Plants grown in disposable plastic pouches in 25 ml Bryan's solution; 10 pouches for each concentration and for control; 5 seeds per pouch, grown under 1 amp with 12 hr photoperiod; after germination one ml of 1:5 (w/v) nitragin AB added as inoculum; average dry weight determined after 30 days
EFFECTS: Alfalfa--growth inhibited at 50 and 500 ppm, 500 ppm gave 75% inhibition, growth promoted at 5 ppm; sweetclover--growth inhibited at all 3 rates, 500 ppm gave 75% inhibition
REFERENCE: Lin, S-C., B.R. Funke, and J.T. Schulz, "Effects of Some Organophosphate and Carbamate Insecticides on Nitrification and Legume Growth," Plant Soil 37:489-496 (1972).

<3118>
<3118>
CHEMICAL NAME: Phosphonic acid, bis[2-(2,4-dichlorophenoxy)ethyl] ester, mixt. with tris[2-(2,4-dichlorophenoxy)ethyl] phosphite
CHEMICAL COMMON NAME: 2,4-DEP
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 5000, 10000, and 20000 ppm
APPLICATION METHODS: Postemergence--2 ml solution sprayed on each pot each week
EXPERIMENTAL CONDITIONS: Greenhouse study; effect on flowering studied
EFFECTS: Significant reduction in flowers per plant, more pronounced at high concentration
REFERENCE: Youngner, V.B. and J.R. Goodin, "Control of PENNISETUM CLANDESTINUM, Kikuyugrass," Weeds 9(2):238-242 (1961).

<3119>
CHEMICAL NAME: Phosphonic acid, bis[2-(2,4-dichlorophenoxy)ethyl] ester, mixt. with tris[2-(2,4-dichlorophenoxy)ethyl] phosphite
CHEMICAL COMMON NAME: Falone
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Postplanting spray; 30 gal/A at 30 lb/sq in
EXPERIMENTAL CONDITIONS: Field study; soil--Stoy silt loam; application one week after planting in winter; time period--1961 and 1962
EFFECTS: Slight weed control
COMMENTS: Effective weed control, lasting until June of following year obtained with atrazine, CIPC, kloben, simazine, lorox, ametryne, and prometryne; atrazine, kloben and simazine gave nearly 100% control; atrazine caused plant injury with more dead plants in treated plots than in control planting; simazine and kloben safer materials
REFERENCE: Sherwood, L.V. and H.R. Kemmerer, "The Influence of Winter Applied Preemergence Herbicides on Weed Growth among Woody Ornamental Plants," Am. Soc. Hort. Sci. 85:657-662 (1964).

<3120>
CHEMICAL NAME: Phosphonic acid, bis[2-(2,4-dichlorophenoxy)ethyl] ester, mixt. with tris[2-(2,4-dichlorophenoxy)ethyl] phosphite
CHEMICAL COMMON NAME: 2,4-DEP
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 5.0 lb/A
APPLICATION METHODS: Preemergence spray; 35 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; soil -- Tifton sandy loam; time period -- 1959 and 1960
EFFECTS: Moderate weed control with no adverse effect on peanut
COMMENTS: Certain mixtures, which contained sesone, 2,1-DEP, or amiben mixed with DNBP, gave seasonal weed control on band-treated peanuts; compared to herbicides applied singly, mixtures not only increased spectrum of weeds controlled but also permitted use of lowest rate of each component on weeds for which it was most effective
REFERENCE: Hauser, E.W., W.C. Shaw, H.F. Harrison, and S.A. Parham, "Herbicides and Herbicide Mixtures for Weed Control in Peanuts," Weeds 10(2):139-144 (1962).

<3121>
CHEMICAL NAME: Phosphonic acid, propyl-, monoethyl ester
CHEMICAL COMMON NAME: NIA-10637
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 4.5 kg/ha (11,250 ppm)
APPLICATION METHODS: Foliage spray, 400 l./ha
EXPERIMENTAL CONDITIONS: Tubers planted in pots, shoots emerged in 7-8 days; spraying after shoot establishment; pots placed in randomized blocks
EFFECTS: Shoot number reduced; inconsistent effects on tubers--decreased tubers in one test, increased tuber number in another test
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<3122>
CHEMICAL NAME: Phosphonic acid, 2,2,2-trichloro-1-methoxyethyl-, dimethyl ester
PLANT: Bean, broad (VICIA FABA); Wheat (TRITICUM VULGARE)
EXPERIMENTAL DOSE: 0.1% solution
APPLICATION METHODS: Seeds soaked for 24 hr; 3-week-old plants sprayed
EXPERIMENTAL CONDITIONS: Morphological study--seeds washed after treatment, planted in pots with soil; shoot length measured after 2 weeks; cytological study--after germination, roots fixed in acetic alcohol (1:3) and stained using Feulgen squash technique
EFFECTS: Morphological study--no significant effect on percentage of seedling emergence and shoot growth, inhibition of root growth and longitudinal division of root tip, 10% of plants sprayed showed chlorosis and died; cytological study--few cells showed chromosome fragments or lagging chromosomes
COMMENTS: Test compound is o-methyl ether of trichlorfon, trade name Dipterex
REFERENCE: Amer, S.M., "Comparative Study of Phytotoxicity and Cytological Effects of Dipterex and its O-Methyl Ether," Naturwissenschaften 53(11):278 (1966).

<3123>
CHEMICAL NAME: Phosphonium, tributyl [2,4-dichlorophenyl)methyl]-, chloride
CHEMICAL COMMON NAME: Chlorphonium chloride
PLANT: Bean, snap (PHASEOLUS VULGARIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 100 ppm
APPLICATION METHODS: Postemergence treatments in nutrient solution; 6 applications to bean within 20 days, 5 applications to corn within 12 days
EXPERIMENTAL CONDITIONS: Hydroponically grown in greenhouse; seeds sprouted and transferred to 1-gal stone crocks, 5 plants/crock; randomized block design with 5 replications; bean harvested after 40 days, corn after 31 days; top and root growth and cation exchange capacity (CEC) measured
EFFECTS: Bean top and root growth decreased compared to control; corn top growth significantly reduced but not root growth; CEC of bean not significantly reduced, corn CEC showed small but significant reduction
COMMENTS: Trade name Phosfon
REFERENCE: Lambeth, V.N. and R.C. Das, "Growth Regulator Effects on Top-Root Ratio and Cation Exchange Capacity of Snap Bean and Sweet Corn Roots," J. Am. Soc. Hortic. Sci. 86:357-360 (1965).

<3124>
CHEMICAL NAME: Phosphonium, tributyl [2,4-dichlorophenyl)methyl]-, chloride
CHEMICAL COMMON NAME: Chlorphonium chloride
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<3125>
CHEMICAL NAME: Phosphonium, tributyl[(2,4-dichlorophenyl)methyl]-, chloride
CHEMICAL COMMON NAME: Phosphon 1.5
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/cu yd
APPLICATION METHODS: Foliar spray to run-off
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Growth retardation with delayed flowering
COMMENTS: Flowering delay caused by aminozide and F 529 formulations exceeded that by phosfon 1.5 added to compost at a rate giving comparable height control; Alar 85 and B-Nine, applied at an identical rate in terms of aminozide content, equally effective and not phytotoxic
REFERENCE: Maw, G.A., "4. Crop Protection," Glasshouse Crops Res. Inst. Rept. 1970:84-98 (1971).

<3126>
CHEMICAL NAME: Phosphonium, tributyl[(2,4-dichlorophenyl)methyl]-, chloride
CHEMICAL COMMON NAME: Phosphon-D
PLANT: Pine, slash (PINUS ELIOTTII)
EXPERIMENTAL DOSE: 0.4, 0.8, 1.6, and 3.2 g/cu ft (potting soil)
APPLICATION METHODS: Addition to potting soil
EXPERIMENTAL CONDITIONS: Lath-house study; pot culture
EFFECTS: No adverse effect noted
COMMENTS: Lack of toxicity or other symptoms at highest level of 'Phosfon-D' indicated dosages too low; CCC applied as foliar spray with or without wetting agent, significantly depressed seedling height growth; extensive damage to foliage (needlos stunded and chlorotic) and developing shoots resulted
REFERENCE: Asher, W.C., "Effects of 2-Chloroethyltrimethylammonium Chloride and 2,4-Dichlorobenzyltributyl Phosphonium Chloride on Growth and Transpiration of Slash Pine," Nature 200:912 (1963).

<3127>
CHEMICAL NAME: Phosphonium, tributyl[(2,4-dichlorophenyl)methyl]-, chloride
CHEMICAL COMMON NAME: Phosphon-D
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1X10(-4)M
APPLICATION METHODS: Solution immersion
EXPERIMENTAL CONDITIONS: Laboratory study; sections of etiolated pea hypocotyls immersed in solutions; 250 mg/5 ml; evaluation time--24 hr; temperature--25C
EFFECTS: Reduced growth but no effect on respiration
COMMENTS: Activity of IAA in control series increased to same extent as fresh matter, i.e. by about 40%; Phosfon 1) and CCC decreased growth by about 50% and did not significantly increase activity of IAA; coumrin inhibited synthesis of enzyme; of growth stimulators tested, only gibberellic acid (GA-3) significantly decreased activity of IAA in CCC series
REFERENCE: Knypl, J.S. and A. Rennert, "Growth Inhibitors and the Indole-3-acetic Acid Oxidase Contents of Cucumber Hypocotyl Sections," Kurse 54:544 (1967).

<3128>
<3128>
CHEMICAL NAME: Phosphonodithioate, S,S-diisopropyl (2-methoxyvinyl)-
CHEMICAL COMMON NAME: Chemagro 7375
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Severe leaf damage with considerable stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3129>
CHEMICAL NAME: Phosphonodithioic acid, ethyl-, O-ethyl S-phenyl ester
CHEMICAL COMMON NAME: Fonofos
PLANT: Spangletop, bearded, (LEPTOCHLOA FASCICULARIS)
EXPERIMENTAL DOSE: 5.6 to 33.6 kg/ha
APPLICATION METHODS: Preplant incorporated (3 to 4 cm depth) by subsurface insecticide applicator; 10% G formulation
EXPERIMENTAL CONDITIONS: Field study; rutabagas harvested after 60 days at 30-day intervals thereafter; whole, sliced, and peelings used to evaluate insecticide persistence with first instar maggots of HYLEMA BRASSICAE
EFFECTS: Undefined phytotoxic effect on rutabagas at higher application rates
COMMENTS: At high rates, phytotoxicity recorded for all compounds except trichloronat and fonofos; phytotoxicity so severe with AC64475 that all plants destroyed with rates in excess of 11.2 kg/acre
REFERENCE: Read, D.C., "Toxicity of Carbamate and Organophosphorus Insecticide Residues Absorbed by Rutabagas Grown in Treated Soil," Can. Entmol. 106(7):1319-1325 (1974).

<3130>
CHEMICAL NAME: Phosphonodithioic acid, ethyl-, O-ethyl S-phenyl ester
CHEMICAL COMMON NAME: Fonofos
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1, 2, and 4 lb/A
APPLICATION METHODS: In 7-in. bands over row and in drill hole with seed
EXPERIMENTAL CONDITIONS: Plano silt loam; plots--single 40-in. rows 40 ft long, randomized block design and 3 or 4 replicates; field studies; yields determined as indication of growth
EFFECTS: No influence on corn yield from 7-in. band application; drill hole application, major yield reduction at 2 and 4 lb/A
REFERENCE: Apple, J.W., "Response of Corn to Granular Insecticides Applied to the Row at Planting," J. Econ. Entomol. 64(5):1208-1211 (1971).

<3131>
CHEMICAL NAME: Phosphonodithioic acid, ethyl-, O-ethyl S-phenyl ester
CHEMICAL COMMON NAME: Dyfonate
PLANT: Clover, sweet (MELILOTUS sp.); Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 5, 50 and 500 ppm
APPLICATION METHODS: Powder prepared from granular formulation
EXPERIMENTAL CONDITIONS: Plants grown in disposable plastic pouches in 25 ml Bryan's solution; 10 pouches for each concentration and for control; 5 seeds per pouch, grown under 1 amp with 12 hr photoperiod; after germination one ml of 1:5 (w/v) nitragin AB added as inoculom; average dry weight determined after 30 days
EFFECTS: Alfalfa--growth inhibition at all 3 rates, 25% at 500 ppm; sweetclover--growth inhibition at all 3 rates, 28% at 500 ppm
REFERENCE: Lin, S-C., B.R. Funke, and J.T. Schulz, "Effects of Some Organophosphate and Carbamate Insecticides on Nitrification and Legume Growth," Plant Soil 37:489-496 (1972).

<3132>
CHEMICAL NAME: Phosphonodithioic acid, ethyl-, O-ethyl S-phenyl ester
CHEMICAL COMMON NAME: Dyfonate
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Moderate to severe leaf damage with stand reduction at higher rate
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3133>
CHEMICAL NAME: Phosphonodithioic acid, ethyl-, S-(4-chloro-3-methylphenyl)O-ethyl ester
CHEMICAL COMMON NAME: N-4446
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: At higher rate, moderate leaf damage with no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3134>
CHEMICAL NAME: Phosphonodithioic acid, O-ethyl-S-(4-chlorophenyl)O-ethyl ester
CHEMICAL COMMON NAME: N-2596
PLANT: Spangletop, bearded, (LEPTOCHLOA FASCICULARIS)
EXPERIMENTAL DOSE: 5.6 to 33.6 kg/ha
APPLICATION METHODS: Preplant incorporated (3 to 4 cm depth) by subsurface insecticide applicator; 10% G formulation
EXPERIMENTAL CONDITIONS: Field study; rutabagas harvested after 60 days at 30-day intervals thereafter; whole, sliced, and peelings used to evaluate insecticide persistence with first instar maggots of HYLEMA BRASSICAE
EFFECTS: Undefined phytotoxic effect on rutabagas at higher application rates
COMMENTS: At high rates, phytotoxicity recorded for all compounds except trichloronat and fonofos; phytotoxicity so severe with AC64475 that all plants destroyed with rates in excess of 11.2 kg/acre
REFERENCE: Read, D.C., "Toxicity of Carbamate and Organophosphorus Insecticide Residues Absorbed by Rutabagas Grown in Treated Soil," Can. Entmol. 106(7):1319-1325 (1974).

<3135>
CHEMICAL NAME: Phosphonodithioic acid, O-ethyl-S-(4-chlorophenyl)O-ethyl ester
CHEMICAL COMMON NAME: N-2596
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 to 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight leaf damage with no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3136>
CHEMICAL NAME: Phosphonodithioic acid, O-ethyl-S-(4-chlorophenyl)O-ethyl ester
CHEMICAL COMMON NAME: N2596
PLANT: Cucumber (CUCUMIS SATIVUS); Tomato (LYCOPERSICON ESCULENTUM); Potato (SOLANUM TUBEROSUM); Pepper, sweet (CAPSICUM FRUTESCENS)
EXPERIMENTAL DOSE: 0.56 kg/ha; 40% EC
APPLICATION METHODS: Preplant and preemergence sprays; 444 l./ha
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted
COMMENTS: Preplanting treatments of chlorpyrifos and leptophos caused no phytotoxicity to peppers, cucumbers, tomatoes or potatoes and only the latter contained detectable residues of chlorpyrifos, leptophos and/or their degradation products at harvest; postplanting row treatments of chlorpyrifos, leptophos, N2596 and WL24073 effective depending on insecticide and crop; insecticides phytotoxic to peppers, tomatoes or potatoes
REFERENCE: Harris, C.R., H.J. Svec, W.W. Sans, A. Hikichi, S.C. Phatak, R. Frank, and H.E. Braun, "Efficacy, Phytotoxicity, and Persistance of Insecticides Used as Pre- and Postplanting Treatments for Control of Cutworms Attacking Vegetables in Ontario," Proc. Ent. Soc. Ont. 105:65-74 (1975).

<3137>
CHEMICAL NAME: Phosphonothioic acid, (1,3-dihydro-1,3-dioxo-2H-isoindol-2-yl)-, O,O-diethyl ester
CHEMICAL COMMON NAME: Dowco 199
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 0.0125, 0.025, and 0.0375%
APPLICATION METHODS: Postemergence spray for control of fungal disease; 200 gal/A; sprayed to run-off
EXPERIMENTAL CONDITIONS: Field study; established orchards; time period--1967 to 1970; trees shielded during spraying
EFFECTS: Increased fruit damage (russeting) of most but not all varieties; alleviated to some extent with Urbacid or captan
COMMENTS: New compounds increased fruit russet and reduced crop and fruit size on several cultivars; important amelioration of russet achieved in some instances by adding Urbacid or captan to sprays
REFERENCE: Butt, D.J., A.H.M. Kirby, and C.J. Williamson, "Fungitoxic and Phytotoxic Effects of Fungicides Controlling Powdery Mildew on Apple," Ann. Appl. Biol. 75(2):217-228 (1973).

<3138>
<3138>
CHEMICAL NAME: Phosphonothioic acid, ethyl-, O-ethyl O-(2,4,5-trichlorophenyl) ester
CHEMICAL COMMON NAME: Trichloronate
PLANT: Sprangletop, bearded, (LEPTOCHLOA FASCICULARIS)
EXPERIMENTAL DOSE: 2.8 to 33.6 kg/ha
APPLICATION METHODS: Preplant incorporated (3 to 4 cm depth) by subsurface insecticide applicator; 10% G formulation
EXPERIMENTAL CONDITIONS: Field study; rutabagas harvested after 60 days at 30-day intervals thereafter; whole, sliced, and peelings used to evaluate insecticide persistence with first instar maggots of HYLEMA BRASSICAE
EFFECTS: No adverse effect on rutabagas
COMMENTS: At high rates, phytotoxicity recorded for all compounds except trichloronat and fonofos; phytotoxicity so severe with AC64475 that all plants destroyed with rates in excess of 11.2 kg/acre
REFERENCE: Read, D.C., "Toxicity of Carbamate and Organophosphorus Insecticide Residues Absorbed by Rutabagas Grown in Treated Soil," Can. Entmol. 106(7):1319-1325 (1974).

<3139>
CHEMICAL NAME: Phosphonothioic acid, ethyl-, O-ethyl O-(2,4,5-trichlorophenyl) ester
CHEMICAL COMMON NAME: Trichloronate
PLANT: Clover, sweet (MELILOTUS sp.); Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 5, 50 and 500 ppm
APPLICATION METHODS: Powder prepared from granular formulation
EXPERIMENTAL CONDITIONS: Plants grown in disposable plastic pouches in 25 ml Bryan's solution; 10 pouches for each concentration and for control; 5 seeds per pouch, grown under 1 amp with 12 hr photoperiod; after germination one ml of 1:5 (w/v) nitragin AB added as inoculom; average dry weight determined after 30 days
EFFECTS: Alfalfa--growth inhibition at 5 and 500 ppm but not at 50 ppm, 13% inhibition at 500 ppm, growth promoted at 50 ppm; sweetclover--inhibition only at 500 ppm (22%), growth promoted at 50 ppm and equal to control at 5 ppm
REFERENCE: Lin, S-C., B.R. Funke, and J.T. Schulz, "Effects of Some Organophosphate and Carbamate Insecticides on Nitrification and Legume Growth," Plant Soil 37:489-496 (1972).

<3140>
CHEMICAL NAME: Phosphonothioic acid, ethyl-, O-ethyl O-(2,4,5-trichlorophenyl) ester
CHEMICAL COMMON NAME: Trichloronate
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 50% EC formulation of trichloronate (Bayer 37289)
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Negligible foliar damage
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3141>
CHEMICAL NAME: Phosphonothioic acid, ethyl-, O-ethyl O-(2,4,5-trichlorophenyl) ester
CHEMICAL COMMON NAME: Bay 37289
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 and 8.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Very slight leaf damage and no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3142>
CHEMICAL NAME: Phosphonothioic acid, ethyl-, O-ethyl O-(2,4,5-trichlorophenyl) ester
CHEMICAL COMMON NAME: Bandane
PLANT: Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 40 and 60 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Flat culture
EFFECTS: No apparent adverse effect
COMMENTS: Kentucky bluegrass plants showed reduction of rhizome number and length and number of tillers; zytron, dacthal, and trifluralin produced greatest reduction; bandane and chlordane reduced rhizome development; crab-e-rad reduced number of tillers and length of rhizomes
REFERENCE: Gaskin, T.A., "Effect of Pre-Emergence Crabgrass Herbicides on Rhizome Development in Kentucky Bluegrass," J. Agron. 56(1):340-342 (1964).

<3143>
CHEMICAL NAME: Phosphonothioic acid, ethyl-O-[2-chloro-1-(2,5 dichlorophenyl)ethenyl]O-methyl ester
CHEMICAL COMMON NAME: WL 24073
PLANT: Cucumber (CUCUMIS SATIVUS); Tomato (LYCOPERSICON ESCULENTUM); Potato (SOLANUM TUBEROSUM); Pepper, sweet (CAPSICUM FRUTESCENS)
EXPERIMENTAL DOSE: 1.12 kg/ha; 10% EC
APPLICATION METHODS: Preplant and preemergence sprays; 444 l./ha
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted
COMMENTS: Preplanting treatments of chlorpyrifos and leptophos caused no phytotoxicity to peppers, cucumbers, tomatoes or potatoes and only the latter contained detectable residues of chlorpyrifos, leptophos and/or their degradation products at harvest; postplanting row treatments of chlorpyrifos, leptophos, N2596 and WL24073 effective depending on insecticide and crop; insecticides phytotoxic to peppers, tomatoes or potatoes
REFERENCE: Harris, C.R., H.J. Svec, W.W. Sans, A. Hikichi, S.C. Phatak, R. Frank, and H.E. Braun, "Efficacy, Phytotoxicity, and Persistance of Insecticides Used as Pre- and Postplanting Treatments for Control of Cutworms Attacking Vegetables in Ontario," Proc. Ent. Soc. Ont. 105:65-74 (1975).

<3144>
CHEMICAL NAME: Phosphonothioic acid, phenyl-, O-(4-bromo-2,5-dichlorophenyl) O-methyl ester
CHEMICAL COMMON NAME: Leptophos
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1,2, and 4 aihg
APPLICATION METHODS: 3 applications (1, 2, and 4 aihg), 7 days apart with hand sprayer; 50% WP formulation
EXPERIMENTAL CONDITIONS: Cultivars--'deep snow pink', 'marguerita', 'neptune', 'nob hill', 'orange bowl', 'snow ridge', 'white Anne', and 'yellow Delaware', initial application August 25; injury recorded from highest rate applied
EFFECTS: No flower or foliage injury
COMMENTS: Trade name, Phosvel
REFERENCE: Poe, S.L., "Evaluations of Pesticides for Phytotoxicity on Chrysanthemum Flowers," Proc. Fl. State Hortic. Soc. 83:469-471 (1970).

<3145>
CHEMICAL NAME: Phosphonothioic acid, phenyl-, O-(4-bromo-2,5-dichlorophenyl) O-methyl ester
CHEMICAL COMMON NAME: Leptophos
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence sprays in 50 gpa water in 1967 and 100 gpa water in 1968 and 1969; spread-sticker Triton B 1956 added to all sprays at 4 ml/gal rate; EC formulation
EXPERIMENTAL CONDITIONS: Field studies; randomized block designs with 4 replications; plots--4 rows wide by 25 ft in 1967 and 3 rows wide by 12 ft in 1968 and 1969; sprays applied for insect control every 7-day period, 9 applications made between last week of August and last week of October
EFFECTS: Foliage injury
COMMENTS: Leptophos applied for caterpillar control; code number, VCS-506
REFERENCE: Creighton, C.S., T.L. McFadden, and R.B. Cuthbert, "Control of Caterpillars on Tomatoes with Chemicals and Pathogens," J. Econ. Entomol. 64(3):737-739 (1971).

<3146>
CHEMICAL NAME: Phosphonothioic acid, phenyl-, O-(4-bromo-2,5-dichlorophenyl) O-methyl ester
CHEMICAL COMMON NAME: Phosvel
PLANT: Carissa (CARISSA GRANDIFLORA); Loquat (ERIOBOTRYA JAPONICA); Euonymous (EUONYMOUS JAPONICUS); Juniper (JUNIPERUS CHINENSIS); Privet (LIGUSTRUM JAPONICUM); Palm, date (PHOENIX CANARIENSIS); Pittosporum (PITTOSPORUM TOBIRO); Podocarpus (PODOCARPUS MACROPHYLLA); Azalea (RHODODENDRON INDICUM); Palm, cabbage (SABAL PALMETTO); Viburnum (VIBURNUM SUSPENSUM)
EXPERIMENTAL DOSE: 1.3 to 10.0 lb/A; EC and 45% WP; sticker-spreader (Plyac)
APPLICATION METHODS: Postemergence spray to run-off; 3X applications at weekly intervals
EXPERIMENTAL CONDITIONS: Greenhouse study; temperatures--80 to 85 F (day) and 62 to 68 F (night); RH--60 to 95%; evaluation time--1 wk
EFFECTS: Moderate to severe injury of loquat, pittosporum, and azalea at 4X application rate and slight injury of carissa and euonymus; no injury of other plants; WP formulation less phytotoxic than EC
COMMENTS: Almost one-half plants exhibited some phytotoxic response; most sensitive plants were schefflera, fluffy ruffle fern, peperomia, and golden pothos; most toxic chemicals were plictran and omite and least phytotoxic materials were zectran and pirimor
REFERENCE: Short, D.E. and D.B. McConnell, "Pesticide Phytotoxicity to Ornamental Plants," Proc. Fla. St. Hort. Soc. 86:439-442 (1974).

<3147>
CHEMICAL NAME: Phosphonothioic acid, phenyl-, O-(4-bromo-2,5-dichlorophenyl) O-methyl ester
CHEMICAL COMMON NAME: Leptophos
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 to 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: No leaf damage or stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3148>
<3148>
CHEMICAL NAME: Phosphonothioic acid, phenyl-, O-(4-bromo-2,5-dichlorophenyl) O-methyl ester
CHEMICAL COMMON NAME: Phosvel
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/100 gal (1X and 2X recommended rate); 2.7% EC
APPLICATION METHODS: Foliar spray; 3 applications once a week; sprayed to run-off at 40 psi
EXPERIMENTAL CONDITIONS: Field study; pot culture; slat shading; evaluation time -- up to 5.5 wk
EFFECTS: Severe damage of croton; moderate damage of olive and hibiscus; slight damage of copperleaf, asparagus fern, schefflera, sea grape, laurel, ixora, jasmine, and viburnum; no damage to remaining plants
COMMENTS: Araucaria, asparagus, chrysalidocarpus, coccoloba, codiaeum, dizygotheca, dracaena, philodendron, pittosporum, podocarpus, and veitcha tolerated most or all of these materials with essentially no damage; acalypha, brassaia, bucida, ficus, hibiscus, ligustrum, and viburnum were sensitive to many or all of the materials; at recommended rates, diazinon and carbaryl produced the least number of phytotoxic symptoms on the least number of species
REFERENCE: Neel, P.L. and J.A. Reinert, "Phytotoxicity Evaluations of Ten Insecticides on Twenty-Three Species of Ornamental Plants Under Slat Shed Conditions," Proc. Fla. State Hortic. Soc. 88:586-590 (1976).

<3149>
CHEMICAL NAME: Phosphonothioic acid, phenyl-, O-(4-bromo-2,5-dichlorophenyl) O-methyl ester
CHEMICAL COMMON NAME: Leptophos
PLANT: Cucumber (CUCUMIS SATIVUS); Tomato (LYCOPERSICON ESCULENTUM); Potato (SOLANUM TUBEROSUM); Pepper, sweet (CAPSICUM FRUTESCENS)
EXPERIMENTAL DOSE: 1.12 kg/ha; 27% EC and 45% WP
APPLICATION METHODS: Preplant and preemergence sprays; 444 l./ha
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted
COMMENTS: Preplanting treatments of chlorpyrifos and leptophos caused no phytotoxicity to peppers, cucumbers, tomatoes or potatoes and only the latter contained detectable residues of chlorpyrifos, leptophos and/or their degradation products at harvest; postplanting row treatments of chlorpyrifos, leptophos, N2596 and WL24073 effective depending on insecticide and crop; insecticides phytotoxic to peppers, tomatoes or potatoes
REFERENCE: Harris, C.R., H.J. Svec, W.W. Sans, A. Hikichi, S.C. Phatak, R. Frank, and H.E. Braun, "Efficacy, Phytotoxicity, and Persistance of Insecticides Used as Pre- and Postplanting Treatments for Control of Cutworms Attacking Vegetables in Ontario," Proc. Ent. Soc. Ont. 105:65-74 (1975).

<3150>
CHEMICAL NAME: Phosphonothioic acid, phenyl-, O-ethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: EPN
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.25 oz/bushel
APPLICATION METHODS: Seed treatment; WP formulations
EXPERIMENTAL CONDITIONS: Field study; slurry treatments of seed; plot--18-ft row with 100 seeds; 8 replications; 19-month old seeds
EFFECTS: Significant decrease in mean number of plants emerged; significant increase in number of mean emergence days
REFERENCE: Starks, K.J. and J.H. Lilly, "Insecticide Seed Treatment of Soybeans in Relation to Phytotoxicity and Seed-Corn Maggot Control," J. Econ. Entomol. 48(5):538-543 (1955).

<3151>
CHEMICAL NAME: Phosphonothioic acid, phenyl-, O-ethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: EPN
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.6 lb/A
APPLICATION METHODS: Postemergence spray for insect control; 10 gal/A; 3X applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted
COMMENTS: Spray injury generally more severe with accumulative applications; most severe with oil soluble formulation of DDT for all dates and accumulative applications, and for dilan and BHC with single applications
REFERENCE: Probst, A. H. and R. T. Everly, "Effect of Foliage Insecticides on Growth, Yield and Chemical Composition of Soybeans," Agron. J. 49:577-581 (1957).

<3152>
CHEMICAL NAME: Phosphoramidic acid, (1-methylethyl)-, ethyl 3-methyl-4-(methylthio) phenyl ester
CHEMICAL COMMON NAME: Phenamiphos
PLANT: Apple (MALUS SYLVESTRIS); Apricot (PRUNUS ARMENIACA); Cherry (PRUNUS MAHALEB); Cherry (PRUNUS AVIUM); Peach (PRUNUS PERSICA); Pear (PYRUS COMMUNIS); Plum (PRUNUS DOMESTICA)
EXPERIMENTAL DOSE: 6.7 kg/ha
APPLICATION METHODS: Granular (15% G) soil application followed by watering
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--21 to 30 C; soil--Vineland silt loam; pot culture
EFFECTS: No phytoxicity observed
COMMENTS: Oxamyl, aldicarb, and carbofuran reduced nematode numbers; phenamiphos was less effective; oxamyl and aldicarb also controlled aphids and mites
REFERENCE: Allen, W.R. and C.F. Marks, "Chemical Control and Population Studies of PRATYLENCHUS PENETRANS on Fruit Tree Understocks," Plant Dis. Rep. 61(2):84-87 (1977).

<3153>
CHEMICAL NAME: Phosphoramidic acid, (1-methylethyl)-, ethyl 3-methyl-4-(methylthio)phenyl ester
CHEMICAL COMMON NAME: Nemacur-P
PLANT: Clover, sweet (MELILOTUS sp.): Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 5, 50 and 500 ppm
APPLICATION METHODS: Powder prepared from granular formulation
EXPERIMENTAL CONDITIONS: Plants grown in disposable plastic pouches in 25 ml Bryan's solution; 10 pouches for each concentration and for control; 5 seeds per pouch, grown under 1 amp with 12 hr photoperiod; after germination one ml of 1:5 (w/v) nitragin AB added as inoculom; average dry weight determined after 30 days
EFFECTS: Alfalfa--growth inhibition at all rates, 42% at 500 ppm; sweetclover--growth inhibition at 500 ppm (18%), growth promoted at 5 and 50 ppm
REFERENCE: Lin, S-C., R.R. Funke, and J.T. Schulz, "Effects of Some Organophosphate and Carbamate Insecticides on Nitrification and Legume Growth," Plant Soil 37:489-496 (1972).

<3154>
CHEMICAL NAME: Phosphoramidic acid, (1-methylethyl)-, ethyl 3-methyl-4-(methylthio)phenyl ester
CHEMICAL COMMON NAME: Bay 68138
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0, 16.0, and 32.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: At highest rates, leaf damage and stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3155>
CHEMICAL NAME: Phosphoramidic acid, (4-methyl-1,3-dithiolan-2-ylidene)-, diethyl ester
CHEMICAL COMMON NAME: Mephosfolan
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: 15% G and 49% EC formulations; postemergence--late-whorl stage and early boot stage; preemergence treatments also
EXPERIMENTAL CONDITIONS: Experiment 1--11 treatments, 2 rows by 30 ft plots, application July 30 to late-whorl stage sorghum; experiment 2--7 treatments, 2 rows by 25 ft plots, August 7 insecticide application to early-boot stage of sorghum; experiment 3--27 treatments, 2 rows by 50 ft plots, preemergence treatment, phytotoxicity measured by plant emergence; randomized complete block design with 3 replicates; test compound is insecticide
EFFECTS: No reported toxicity
COMMENTS: Insecticide applied for greenbug control; trade name Cytrolane
REFERENCE: Depew, L.J., "Further Evaluation of Insecticides for Greenbug Control on Grain Sorghum in Kansas," J. Econ. Entomol. 65(4):1095-1098 (1972).

<3156>
CHEMICAL NAME: Phosphoramidic acid, 1,3-dithiolan-2-ylidene-, diethyl ester
CHEMICAL COMMON NAME: Phosfolan
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: 15% G and 3% EC formulations; postemergence--late-whorl stage and early boot stage; preemergence treatments also
EXPERIMENTAL CONDITIONS: Experiment 1--11 treatments, 2 rows by 30 ft plots, application July 30 to late-whorl stage sorghum; experiment 2--7 treatments, 2 rows by 25 ft plots, August 7 insecticide application to early-boot stage of sorghum; experiment 3--27 treatments, 2 rows by 50 ft plots, preemergence treatment, phytotoxicity measured by plant emergence; randomized complete block design with 3 replicates; test compound is insecticide
EFFECTS: Leaf burn
COMMENTS: Insecticide applied for greenbug control; trade name Cyolane
REFERENCE: Depew, L.J., "Further Evaluation of Insecticides for Greenbug Control on Grain Sorghum in Kansas," J. Econ. Entomol. 65(4):1095-1098 (1972).

<3157>
CHEMICAL NAME: Phosphoramidothioate, O-(2,4-dichlorophenyl) O'-methyl-N-isopropyl-
CHEMICAL COMMON NAME: DMPA
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-3) and 10(-4)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3158>
<3158>
CHEMICAL NAME: Phosphoramidothioate, O-(2,4-dichlorophenyl) O'-methyl-N-isopropyl-
CHEMICAL COMMON NAME: DMPA
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 10.0 and 20.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate weed control with no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and B-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<3159>
CHEMICAL NAME: Phosphoramidothioate, O-(2,4-dichlorophenyl) O'-methyl-N-isopropyl-
CHEMICAL COMMON NAME: DMPA
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Oat (AVENA SATIVA); Oat (AVENA SATIVA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 7.5 and 15.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; time period--1962 to 1964; residue effect on subsequent crops (oats and soybean) studied after one and two years
EFFECTS: Moderate weed control with no adverse effect on crop plants
COMMENTS: Simazine most effective for controlling annual weed species in asparagus; linuron, diphenamid, monuron, and DCPA controlled weed species; other herbicides tested less effective
REFERENCE: Sandhu, S.S. and J.K. Greig, "Effects of Herbicides on Asparagus and Weeds, and Residues Retained in the Soil," Am. Soc. Hort. Sci. 88:372-377 (1966).

<3160>
CHEMICAL NAME: Phosphoramidothioate, O-(2,4-dichlorophenyl) O'-methyl-N-isopropyl-
CHEMICAL COMMON NAME: DMPA
PLANT: Bluegrass, annual (POA ANNUA); Bluegrass, Kentucky (POA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Fescue, creeping red (FESTUCA RUBRA); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 10 to 40 lb/A
APPLICATION METHODS: Preemergence spray (field); 35 psi; for soluble or wettable materials; sand carrier for remaining materials; applied annually for 3 years; addition to soil (greenhouse)
EXPERIMENTAL CONDITIONS: Field study; bluegrass turf killed with methyl bromide and plots seeded 3 days afterwards with various turf grasses; time period--1960 to 1962; greenhouse study--studied seedling emergence (germination) up to 93 days in flat culture
EFFECTS: At 20 lb/A, reduced stand of common bluegrass and red fescue with no adverse effect on other grasses after 3 applications; reduced germination of all grasses (greenhouse) up to 93 days after herbicide application
COMMENTS: With few exceptions, herbicides retarded stand and vigor of turfgrasses seeded in turf killed with methyl bromide; chlordane was least and commercial arsenic complex plus 7% N most toxic to young seedlings; seedlings of Merion Kentucky bluegrass most resistent to herbicide injury; no appreciable decrease in original turf density noted except for arsenic complex material which severely injured bluegrass turf
REFERENCE: Juska, F.V. and A.A. Hanson, "Effect of Preemergence Crabgrass Herbicides on Seedling Emergence of Turfgrass Species," Weeds 12(2):97-101 (1964).

<3161>
CHEMICAL NAME: Phosphoramidothioic acid, (1-methylethyl)-, O-(2,4-dichlorophenyl) O-methyl ester
CHEMICAL COMMON NAME: Zytron
PLANT: Bluegrass, annual (POA ANNUA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 10 and 15 lb/A
APPLICATION METHODS: Preplant solution soak
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Puyallup fine sandy loam; pH--5.8; temperature--approx 60 F
EFFECTS: Effective control of bluegrass at higher rate with no adverse effect on bentgrass
COMMENTS: Dacthal, betasan, dipropalin, trifluralin, and enide significantly controlled annual bluegrass for periods of 9 to 12 weeks; dacthal and betasan completely nonphytotoxic to mature turf
REFERENCE: Goss, R.L., "Preemergence Control of Annual Bluegrass (POA ANNUA L.)," J. Agron. 56(1):479-481 (1964).

<3162>
CHEMICAL NAME: Phosphoramidothioic acid, (1-methylethyl)-, O-(2,4-dichlorophenyl) O-methyl ester
CHEMICAL COMMON NAME: Zytron
PLANT: Nimblewill (MUHLENBERGIA SCHREBERI); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 7.5 to 30.0 lb/A; G and liquid
APPLICATION METHODS: Foliar spray (liquid) and broadcast (G)
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of nimblewill at 30.0 lb/A with no damage of bluegrass; G formulation ineffective
COMMENTS: Selective nimblewill control in bluegrass lawns with sprays of Zytron possible under summer conditions using 15 pounds per acre in 100 gallons of water and repeating application 2-3 weeks later
REFERENCE: Daniel, W.H. and J.W. Herron, "Use of Zytron for Controlling Nimblewill in Bluegrass Turf," Down to Earth 17(4):21-23 (1962).

<3163>
CHEMICAL NAME: Phosphoramidothioic acid, (1-methylethyl)-, O-(2,4-dichlorophenyl) O-methyl ester
CHEMICAL COMMON NAME: Zytron
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants; Pepper, pimento
EXPERIMENTAL DOSE: 5, 10, and 15 lb/A
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Effective weed control with no adverse effect on tomato and pimento
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.B. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<3164>
CHEMICAL NAME: Phosphoramidothioic acid, (1-methylethyl)-, O-(2,4-dichlorophenyl) O-methyl ester
CHEMICAL COMMON NAME: Zytron
PLANT: Crabgrass (DIGITARIA sp.); Bentgrass (AGROSTIS sp.); Bluegrass, Kentucky (POA PRATENSIS); Fescue (FESTUCA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Clover, white (TRIFOLIUM REPENS)
EXPERIMENTAL DOSE: 15.0 lb/A
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective crabgrass control with little or no adverse effect on turfgrasses or clover; seed germination severely reduced
COMMENTS: Where applied to greenhouse flats immediately after seeding rows of turfgrasses and crabgrasses, chemicals allowed turfgrass seeds to sprout and grow normally while crabgrass died within few day after sprouting
REFERENCE: Gallagher, J.E. and R.J. Otten, "New Organic Arsenical Materials for Pre-Emergence Crabgrass Control," Hormolog. 3(1):11-13 (1961).

<3165>
CHEMICAL NAME: Phosphoramidothioic acid, (1-methylethyl)-, O-(2,4-dichlorophenyl) O-methyl ester
CHEMICAL COMMON NAME: Zyron
PLANT: Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 15.0 and 22.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Flat culture
EFFECTS: Reduced numbers or growth of rhizomes and tillers
COMMENTS: Kentucky bluegrass plants showed reduction of rhizome number and length and number of tillers; zytron, dacthal, and trifluralin produced greatest reduction; bandane and chlordane reduced rhizome development; crab-e-rad reduced number of tillers and length of rhizomes
REFERENCE: Gaskin, T.A., "Effect of Pre-Emergence Crabgrass Herbicides on Rhizome Development in Kentucky Bluegrass," J. Agron. 56(1):340-342 (1964).

<3166>
CHEMICAL NAME: Phosphoramidothioic acid, (1-methylethyl)-, O-ethyl O-(4-methyl-2-nitrophenyl) ester
CHEMICAL COMMON NAME: NTN 5006
PLANT: Junglerice (ECHINOCHLOA COLONUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 2,4 and 6 kg/ha
APPLICATION METHODS: Knapsack sprayer application at 670 dm(3)/ha volume
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; 3 x 5 m plots; visual toxicity and weed control ratings
EFFECTS: Application 5 to 8 days after seeding at 2 and 4 kg/ha--C. ROTUNDUS and R. EXALTATA resistant, L. CHINESIS and E. COLONUM susceptible, minor rice toxicity; 4 and 6 kg/ha preemergence application--same weed control, stand reduction in rice, minor to moderate rice toxicity
COMMENTS: NTN 5006 gave best control of L. CHINENSIS compared to other herbicides tested; effects for all weed not specifically reported; dropped from testing by manufacturers
REFERENCE: Aryeetey, A.N., "Chemical Weed Control in Rice in Ghana," Ghana J. Agric. Sci. 6:199-204 (1973).

<3167>
CHEMICAL NAME: Phosphoramidothioic acid, (1-methylethyl)-, O-ethyl O-(4-methyl-2-nitrophenyl) ester
CHEMICAL COMMON NAME: NTN-5006
PLANT: Plants; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 2.0 kg/ha; G and sprayable liquids
APPLICATION METHODS: Broadcast (G) and spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control and increased rice yield
COMMENTS: 2,4-D and MCPA equally effective in controlling barnyard grass and other annual weeds in transplanted rice; yields significantly increased in nearly all applications; for direct-seeded flooded rice, granular formulations of several new herbicides, such as butachlor, benthiocarb and C-288 highly selective in controlling barnyardgrass and other annual weeds under tropical conditions
REFERENCE: De Datta, S.K., "Chemical Weed Control in Tropical Rice in Asia," PANS 28(4):433-440 (1972).

<3168>
CHEMICAL NAME: Phosphoramidothioic acid, (1-methylethyl)-, O-(2,4-dichlorophenyl)O-methyl ester
CHEMICAL COMMON NAME: DMPA
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Nimblewill (MUHLENBERGIA SCHREBERI)
EXPERIMENTAL DOSE: 25, 30, and 35 lb/A
APPLICATION METHODS: Postemergence spray in 30 gpa solution
EXPERIMENTAL CONDITIONS: Nimblewill and bluegrass 3 to 5 in. high when treated; 6 X 17 ft plots; randomized block design with 3 replications; bluegrass injury rating 4 weeks after treatment; percent nimblewill

<3168>
<3169> CONT.
reduction determined at 7 and 52 weeks after treatment
EFFECTS: Bluegrass--10, 10, and 11.5% injury at 25, 30, and 35 lb/A, respectively; nimblewill--96.3, 95.5, and 92.3% reduction at 7 weeks at 25, 30, and 35 lb/A, respectively and 6.0, 6.0, and 6.6% reduction at 52 weeks with respective rates
REFERENCE: Waldrep, T.W. and J.F. Freeman, "Herbicides for Nimblewill in Kentucky Bluegrass Pasture," Weeds 12(4):317-318 (1964).

<3169>
CHEMICAL NAME: Phosphoramidothioic acid, (1-methylethyl)-, O-(2,4-dichlorophenyl)O-methyl ester
CHEMICAL COMMON NAME: DMPA
PLANT: Nimblewill (MUHLENBERGIA SCHREBERI)
EXPERIMENTAL DOSE: 7.5, 10, 15, 20, and 30 lb/A
APPLICATION METHODS: Postemergence treatments; granular and liquid formulations
EXPERIMENTAL CONDITIONS: Application to established nimblewill stands
EFFECTS: Two 15 lb/A treatments necessary for satisfactory control; 30 lb/A (1 application) gave good control; spot treatments necessary for complete eradication
COMMENTS: Granular treatments not effective; spring and summer application best; trade mane Zytron
REFERENCE: Herron, J.W., "Nimblewill in Kentucky Bluegrass Lawns Controlled by Herbicides," K. Farm Home Sci. 8(2):4-5, 8 (1962).

<3170>
CHEMICAL NAME: Phosphoramidothioic acid, (1-methylpropyl)-, O-ethyl O-(5-methyl-2-nitrophenyl) ester
CHEMICAL COMMON NAME: Hercules 26905
PLANT: Grasses; Broadleaf weeds; Purslane, common (PORTULACA OLERACEA); Crabgrass (DIGITARIA sp.); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Groundsel, common (SENECIO VULGARIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Azalea (RHODENDRON OBTUSUM); Andromeda (PIERIS JAPONICA); Maple, amur (ACER GINNALA); Maple, Japanese (ACER PALMATUM); Juniper (JUNIPERUS CHINENSIS); Holly (ILEX CRENATA); Privet, California (LIGUSTRUM OVALIFOLIUM); Firethorn (PYRACANTHA COCCINEA); Yew (TAXUS INTERMEDIA); Hemlock, Canadian (TSUGA CANADENSIS); Pine, Japanese black (PINUS THUNBERGII); Honeysuckle, gold flame (LONICERA HECKROTTI); Dogwood, flowering (CORNUS FLORIDA); Goldenbells (FORSYTHIA INTERMEDIA); Hydrangea (HYDRANGEA PANICULATA)
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A; 4% EC
APPLICATION METHODS: Postemergence spray, TeeJet nozzle; shaker broadcast for granular
EXPERIMENTAL CONDITIONS: Field study; nursery liners
EFFECTS: Effective control of all weeds at 8.0 lb/A and slight-moderate damage to most ornamentals
COMMENTS: Alachlor and alachlor plus simazine combinations gave nearly complete weed control without injury to test plants; combinations of other herbicides with simazine also effective; Velsicol 5052 very effective against all plants, including nursery plants
REFERENCE: Bing, A., "1976 Preemergence Weed Control in Nursery Liners," Proc. Northeast Weed Sci. Soc. 31:320-325 (1977).

<3171>
CHEMICAL NAME: Phosphoramidothioic acid, (1-methylpropyl)-, O-ethyl O-(5-methyl-2-nitrophenyl) esterHercules 26905
CHEMICAL COMMON NAME: Hercules 26905
PLANT: Broadleaf weeds; Grasses; Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 2.0 and 4.0 kg/ha
APPLICATION METHODS: Preplant, preplant incorporated (6-7.5 cm depth), preemergence, and postemergence sprays; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: At 4.0 kg/ha in preplant incorporated application, effective control of all weeds with no adverse effect on tomato yield; considerably less effective in postemergence application
COMMENTS: In direct-seeded tomatoes, FMC 25213 showed promise for providing broad spectrum weed control; CGA 24705 and Hoe 23408 found selective for annual grasses; with transplanted tomatoes, oxidiazon preplant and Hercules 26905 preplant incorporated provided effective weed control in addition to compounds mentioned for seeded crop
REFERENCE: Henne, R.C., "New Compounds with Potential for Weed Control in Tomatoes," Proc. Northeast. Weed Sci. Soc. 31:207-214 (1977).

<3172>
CHEMICAL NAME: Phosphoramidothioic acid, acetyl-, O,S-dimethyl ester
CHEMICAL COMMON NAME: Acephate
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliar injury to palm of 0.5 lb/100 gal, to palm and maranta at 1.0 lb/100 gal, and to all species at 2.0 lb/100 gal
COMMENTS: 75% WP formulation; trade name Orthene
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<3173>
CHEMICAL NAME: Phosphoramidothioic acid, acetyl-, O,S-dimethyl ester
CHEMICAL COMMON NAME: Acephate
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliar injury to palm at 0.5 lb/100 gal, to palm and maranta at 1.0 lb/100 gal, and to all species at 2.0 lb/100 gal
COMMENTS: 75% WP formulation; trade name Orthene
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<3174>
CHEMICAL NAME: Phosphoramidothioic acid, acetyl-, O,S-dimethyl ester
CHEMICAL COMMON NAME: RE-12120
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 2.0 and 4.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight leaf damage but no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3175>
CHEMICAL NAME: Phosphoramidothioic acid, acetyl-, O,S-dimethyl ester
CHEMICAL COMMON NAME: Acephate
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA);Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Dracena (DRACAENA SANDERIANA); Prayer plant (MARANTA LEUCONEURA); Sword-fern (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal
APPLICATION METHODS: Amount formulated--0.66 and 1.5 lb respectively; 5 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Greenhouse conditions; leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume equivalent); sprays applied prior to 10:00 a.m.; 5 test from May to November; temperature--83 to 98 F (day) and 56 to 78 F (night)
EFFECTS: A. SQUARROSA--slight injury at both rates (tip necrosis); no injury to other plants
COMMENTS: Experimental concentrations--recommended and twice the recommended rate
REFERENCE: Hamlen, R.A. and R.W. Henley, "Phytotoxicity to Tropical Foliage Plants of Repeated Insecticide and Miticide Applications Under Fiberglass-Covered Greenhouse Conditions," Proc. Fla. State Hort. Soc. 89:336-338 (1976).

<3176>
CHEMICAL NAME: Phosphoramidothioic acid, O-2,4-dichlorophenyl-O-(2-methylpropyl)-
CHEMICAL COMMON NAME: M-1329
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bluegrass, annual (POA ANNUA); Fescue, creeping red (FESTUCA RUBRA); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 20.0 lb/A
APPLICATION METHODS: Applied to soil surface as preemergence spray; 35 to 40 psi
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; herbicides applied and seed planted at monthly intervals to determine residual effect; time period--1958 and 1959
EFFECTS: No adverse effect on turfgrasses when applied in June, but reduced germination of Merion bluegrass and bentgrass when applied in July
COMMENTS: In pre-emergence crabgrass control study in turf, no significant differences found between calcium arsenate and arsenic complex + 7% nitrogen with respect to time of application; these herbicides effectively controlled crabgrass; however, arsenic complex + 7% nitrogen injured turf; fenac formulations did not satisfactorily control crabgrass and severely injured turf; chlordane most effective when applied in the spring but did not satisfactorily control crabgrass
REFERENCE: Juska, F.V., "Pre-emergence Herbicides for Crabgrass Control and Their Effects on Germination of Turfgrass Species," Weeds 9(1):137-144 (1961).

<3177>
CHEMICAL NAME: Phosphoramidothioic, acetyl-, O,S-dimethyl ester
CHEMICAL COMMON NAME: Orthene
PLANT: Carissa (CARISSA GRANDIFLORA); Loquat (ERIOBOTRYA JAPONICA); Euonymous (EUONYMOUS JAPONICUS); Juniper (JUNIPERUS CHINENSIS); Privet (LIGUSTRUM JAPONICUM); Palm, date (PHOENIX CANARIENSIS); Pittosporum (PITTOSPORUM TOBIRO); Podocarpus (PODOCARPUS MACROPHYLLA); Azalea (RHODODENDRON INDICUM); Palm, cabbage (SABAL PALMETTO); Viburnum (VIBURNUM SUSPENSUM)
EXPERIMENTAL DOSE: 1.0 and 4.0 lb/A; sticker-spreader (Plyac)
APPLICATION METHODS: Postemergence spray to run-off; 3X applications at weekly intervals
EXPERIMENTAL CONDITIONS: Greenhouse study; temperatures--80 to 85 F (day) and 62 to 68 F (night); RH--60 to 95%; evaluation time--1 wk

<3177>
<3177> CONT.
EFFECTS: Moderate injury of schefflera at 2X (40 lb/A) application rate with slight injury of dieffenbachia, golden pothos, nephthytis, and loquat; no injury to remaining plants
COMMENTS: Almost one-half plants exhibited some phytotoxic responses; most sensitive plants were schefflera, fluffy ruffle fern, peperomia, and golden pothos; most toxic chemicals were plictran and omite and least phytotoxic materials were zectran and pirimor
REFERENCE: Short, D.E. and D.B. McConnell, "Pesticide Phytotoxicity to Ornamental Plants," Proc. Fla. St. Hort. Soc. 86:439-442 (1974).

<3178>
CHEMICAL NAME: Phosphoric acid, diethyl-4-nitrophenyl ester
CHEMICAL COMMON NAME: Endothall, di-N,N-dimethylcocoamine salt
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 1.0 to 5.0 ppmw
APPLICATION METHODS: Injected under surface of water by spray nozzle at 120 psi
EXPERIMENTAL CONDITIONS: Field study; naiads growing in 2 locations in FL; time period--1960 to 1962
EFFECTS: Effective naid control at all rates for up to 8 wk
COMMENTS: Most promising of 13 herbicides for control of southern naiad were acrolein, endothall, diquat, and paraquat; acrolein and endothall gave most rapid kill of southern naiad but retreatment necessary at end of 16 weeks
REFERENCE: Blackburn, R.D. and L.W. Weldon, "Control of Southern Naiad in Florida Drainage and Irrigation Channels," Weeds 12(4):295-298 (1964).

<3179>
CHEMICAL NAME: Phosphoric acid, diethyl-4-nitrophenyl ester
CHEMICAL COMMON NAME: Paraoxon
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 2.4x10(-7) M
APPLICATION METHODS: Added to fresh tissue homogenate prepared from plants at 5-leaf stage
EXPERIMENTAL CONDITIONS: Laboratory study; enzyme study
EFFECTS: Inhibition of propanil-hydrolyzing enzyme
COMMENTS: Hydrolysis of rice plants inhibited by insecticides; inhibitory activity of organophosphate such as paraoxon IN VIVO and IN VITRO significantly stronger than that of organothiophosphate such as parathion; injury to rice plants by insecticides sprayed on them with propanil seems to be caused by inhibition of propanil detoxifying enzyme
REFERENCE: Matsunaka, S., "Propanil Hydrolysis: Inhibition in Rice Plants by Insecticides," Sci. 160:1360-1361 (1968).

<3180>
CHEMICAL NAME: Phosphoric acid, dimethyl 1-methyl-3-(methylamino)-3-oxo-1-propenyl ester, (E)-
CHEMICAL COMMON NAME: Monocrotophos
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence spray; 4 gal/tree at 350 psi; repeat (3) applications; 5% EC Formulation
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: No adverse effect on peach fruit set
COMMENTS: Fruit counts with methyl parathion and azinphosmethyl significantly lower than control; carbaryl and monocrotophos treatments also less, but differences not statistically significant; no obvious differences in fruit size at maturity in various treatments, although fruit from trees sprayed with methyl parathion seemed 1-2 days slower in maturing
REFERENCE: Rice, R.E. and R.A. Jones, "Reduction of Fruit Set by Repeated Applications of Selected Insecticides to Peaches," Environ. Entom. 1(5):677-678 (1972).

<3181>
CHEMICAL NAME: Phosphoric acid, dimethyl 1-methyl-3-(methylamino)-3-oxo-1-propenyl ester, (E)-
CHEMICAL COMMON NAME: Monocrotophos
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.5, 1.0, and 1.5 aihg
APPLICATION METHODS: 3 applications (0.5, 1.0, and 1.5 aihg), 7 days apart; 3.2% EC formulation
EXPERIMENTAL CONDITIONS: Cultivars--'deep snow pink', 'marguerita', 'neptune', 'nob hill', 'orange bowl', 'snow ridge', 'white Anne', and 'yellow Delaware', initial application August 25; injury recorded from highest rate applied
EFFECTS: No flower or foliage injury
COMMENTS: Trade name, Azodrin
REFERENCE: Poe, S.L., "Evaluations of Pesticides for Phytotoxicity on Chrysanthemum Flowers," Proc. Fl. State Hortic. Soc. 83:469-471 (1970).

<3182>
CHEMICAL NAME: Phosphoric acid, dimethyl 1-methyl-3-(methylamino)-3-oxo-1-propenyl ester, (E)-
CHEMICAL COMMON NAME: Monocrotophos
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.25 lb/A
APPLICATION METHODS: 3.2% WS formulation; postemergence--late-whorl stage and early-boot stage; preemergence treatment also
EXPERIMENTAL CONDITIONS: Experiment 1--11 treatments, 2 rows by 30 ft plots, application July 30 to late-whorl stage sorghum; experiment 2--7 treatments, 2 rows by 25 ft plots, August 7 insecticide application to early-boot stage of sorghum; experiment 3--27 treatments, 2 rows by 50 ft plots, preemergence treatment, phytotoxicity measured by plant emergence; randomized complete block design with

<3182> CONT.
3 replicates; test compound is insecticide
EFFECTS: Leaf burn
COMMENTS: Insecticide applied for greenbug control
REFERENCE: Depew, L.J., "Further Evaluation of Insecticides for Greenbug Control on Grain Sorghum in Kansas," J. Econ. Entomol. 65(4):1095-1098 (1972).

<3183>
CHEMICAL NAME: Phosphoric acid, dimethyl 1-methyl-3-(methylamino)-3-oxo-1-propenyl ester, (E)-
CHEMICAL COMMON NAME: Monocrotophos
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: At higher rate, very slight leaf damage and some stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.B., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3184>
CHEMICAL NAME: Phosphoric acid, dimethyl-3-methyl-4-nitrophenyl ester
CHEMICAL COMMON NAME: Sumioxon
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 1.5x10(-6) M
APPLICATION METHODS: Added to fresh tissue homogenate prepared from plants at 5-leaf stage
EXPERIMENTAL CONDITIONS: Laboratory study; enzyme study
EFFECTS: Inhibition of propanil-hydrolyzing enzyme
COMMENTS: Hydrolysis of rice plants inhibited by insecticides; inhibitory activity of organophosphate such as paraoxon IN VIVO and IN VITRO significantly stronger than that of organothiophosphate such as parathion; injury to rice plants by insecticides sprayed on them with propanil seems to be caused by inhibition of propanil detoxifying enzyme
REFERENCE: Matsunaka, S., "Propanil Hydrolysis: Inhibition in Rice Plants by Insecticides," Sci. 160:1360-1361 (1968).

<3185>
CHEMICAL NAME: Phosphoric acid, tributyl ester
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: Low volume spray of 5 ml/sq yd with each treatment containing 4% of test compound
APPLICATION METHODS: Spray in spray chamber
EXPERIMENTAL CONDITIONS: Pots in greenhouse
EFFECTS: No significant effects
COMMENTS: Used as co-solvent to incorporate chemicals into oil solution
REFERENCE: Ennis, W.B., C.P. Swanson, R.W. Allard, and F.T. Boyd, "Effects of Certain Growth-Regulating Compounds on Irish Potatoes," Bot Gaz. 106:568-574 (1946).

<3186>
CHEMICAL NAME: Phosphoric acid, 1,2-dibromo-2,2-dichloroethyl dimethyl ester
CHEMICAL COMMON NAME: Naled
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 8 lb/gal EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No injury
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3187>
CHEMICAL NAME: Phosphoric acid, 1,2-dibromo-2,2-dichloroethyl dimethyl ester
CHEMICAL COMMON NAME: Naled
PLANT: Tomato (LYCOPERSICON PIMPINELLIFOLIUM); Tomato (LYCOPERSICON PERUVIANUM); Tomato (LYCOPERSICON HIRSUTUM); Tomato (LYCOPERSICON ESCULENTUM); Petunia (PETUNIA sp.)
EXPERIMENTAL DOSE: 1000 ppm; EC
APPLICATION METHODS: Added (spray) to agar medium disk to run-off
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--15 hr; pollen germinated and length of germination tube measured
EFFECTS: No pollen germination or tube growth
COMMENTS: Germination of petunia and tomato pollen completely inhibited by topical applications of naled; reduction in germination and tube elongation of pollen caused by parathion, azinphosmethyl, dicofol, endosulfan, dichlorvos, DDT, and gardona
REFERENCE: Gentile, A.G., K.J. Gallagher, and Z. Santner, "Effect of Some Formulated Insecticides on Pollen Germination in Tomato and Petunia," J. Econ. Ent. 64(4):916-919 (1971).

<3188>

<3189>
CHEMICAL NAME: Phosphoric acid, 2-chloro-1-(2,4-dichlorophenyl)ethenyl diethyl ester
CHEMICAL COMMON NAME: Chlorfenvinphos
PLANT: Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 1.83, 1.90, and 2.2 kg/ha
APPLICATION METHODS: Broadcast at time of seeding; incorporated by "bow-wave" method; G Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and silt loam; time period--1972 and 1973; locations in England and Canada; trifluralin and propachlor combined treatment for effective weed control
EFFECTS: No adverse effect on cauliflower stand or yield
COMMENTS: Two combinations of herbicides, trifluralin incorporated pre-drilling plus propachlor pre-emergence, and nitrofen plus propachlor applied pre-emergence, gave good weed control; relative effectiveness depended on species composition of weed population; insecticides isophenphos, carbofuran, chlorfenvinphos and fensulfothion applied as bow-wave treatments; none whether in combination with herbicides or not, adversely affected crop stand or yield; yield reduced when either weeds or root-fly maggots not controlled
REFERENCE: Finlayson, D.G. and C.J. Campbell, "Herbicides and Insecticides: Their Compatibility and Effects on Weeds, Insects and Earthworms in the Minicauliflower Crop," Ann. Appl. Biol. 79(1):95-108 (1975).

<3189>
CHEMICAL NAME: Phosphoric acid, 2-chloro-1-(2,4-dichlorophenyl)ethenyl diethyl ester
CHEMICAL COMMON NAME: Chlorfenvinphos
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.025, 0.05, and 0.10%
APPLICATION METHODS: As spray in 625 l./ha of spray material; postemergence on 42-day old crop
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: Safe at 0.025%, 40% of leaves affected after 3 and 6 days; mild at 0.05%, 28.5% of leaves affected after 3 and 6 days; medium at 0.10%, 83.3% of leaves affected after 3 and 6 days
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadyan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<3190>
CHEMICAL NAME: Phosphoric acid, 2-chloro-1-(2,4,5-trichlorophenyl)ethenyl dimethyl ester, (Z)-
CHEMICAL COMMON NAME: GS-14254
PLANT: Bean, mung (PHASEOLUS AUREUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 to 100 ppm; 0.02% Triton-1956 or 2.0% DMSO
APPLICATION METHODS: Placed in petri plates on double filter paper with solutions added
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination and 120-hour seedling growth; 30 C in dark
EFFECTS: At 100 or 200 ppm, significant reduction of germination and seedling growth for both test species with varied biochemical alterations
COMMENTS: Suppressed germination and seedling growth as result of impaired respiration, starch, and protein degradation; inhibited development of amylase and ATPase activities during germination; effects more pronounced in wheat than in mung beans
REFERENCE: Dalvi, R.R., B. Singh, and D.K. Salunkhe, "Influence of Selected Pecticides on Germination and Associated Metabolic Changes in Wheat and Mung Bean Seeds," J. Agric. Food Chem. 20(5):1000-1003 (1972).

<3191>
CHEMICAL NAME: Phosphoric acid, 2-chloro-1-(2,4,5-trichlorophenyl)ethenyl dimethyl ester, (Z)-
CHEMICAL COMMON NAME: Tetrachlorvinphos
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.5, 1.0, and 2.0 aihg
APPLICATION METHODS: 3 applications (1.0, 0.5, and 2.0 aihg), 7 days apart with hand sprayer, 75% WP formulation
EXPERIMENTAL CONDITIONS: Cultivars--'deep snow pink', 'marguerita', 'neptune', 'nob hill', 'orange bowl', 'snow ridge', 'white Anne', and 'yellow Delaware', initial application August 25; injury recorded from highest rate applied
EFFECTS: No foliage injury; moderate flower injury to 'nob hill'; minor flower injury to 'white Anne, 'neptune', 'orange bowl', and 'marguerita'
COMMENTS: Trade name, Gardona
REFERENCE: Poe, S.L., "Evaluations of Pesticides for Phytotoxicity on Chrysanthemum Flowers," Proc. Fl. State Hortic. Soc. 83:469-471 (1970).

<3192>
CHEMICAL NAME: Phosphoric acid, 2-chloro-1-(2,4,5-trichlorophenyl)ethenyl dimethyl ester, (Z)-
CHEMICAL COMMON NAME: Tetrachlorvinphos
PLANT: Apple (PYRUS MALUS); Plum (PRUNUS sp.)
EXPERIMENTAL DOSE: 0.5, 0.68, 0.75, 1.0, 1.5, and 2.0 lb/100 gal
APPLICATION METHODS: Dilute spray by hydraulic sprayer at 35 gal/min and 450-600 psi; 75% WP formulation
EXPERIMENTAL CONDITIONS: Field and laboratory tests; randomized complete block design with single tree plots; insecticide treatments replicated 3 to 4 times; sulfur, captan, or combination of both fungicides added with insecticides; multi-year experiments
EFFECTS: Extensive rossetting of 'Golden Delicious' apples
COMMENTS: Main Emphasis of study was control of plum curculio (CONOTRACHELUS NENUPHAR); trade name Gardona
REFERENCE: Forsythe, H.Y., Jr. and F.R. Hall, "Control of the Plum Curculio in Ohio," J. Econ. Entomol. 65(6):1703-1706 (1972).

<3193>
CHEMICAL NAME: Phosphoric acid, 2-chloro-1-(2,4,5-trichlorophenyl)ethenyl dimethyl ester, (Z)-
CHEMICAL COMMON NAME: Tetrachlorvinphos
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.025, 0.05, and 0.1%
APPLICATION METHODS: As spray in 625 l./ha of spray material; postemergence on 42-day old crop
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: Safe except at 0.1%; 25% of leaves mildly affected after 3 and 6 days at 0.1%
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadyan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<3194>
CHEMICAL NAME: Phosphoric acid, 2-chloro-1-(2,4,5-trichlorophenyl)ethenyl dimethyl ester, (Z)-
CHEMICAL COMMON NAME: Gardona
PLANT: Petunia (PETUNIA sp.)
EXPERIMENTAL DOSE: 1000 ppm; WP
APPLICATION METHODS: Added (spray) to agar medium disk to run-off
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--15 hr; pollen germinated and length of germination tube measured
EFFECTS: Reduced germination and pollen tube growth
COMMENTS: Germination of petunia and tomato pollen completely inhibited by topical applications of naled; reduction in germination and tube elongation of pollen caused by parathion, azinphosmethyl, difocol, endosulfan, dichlorvos, DDT, and gardona
REFERENCE: Gentile, A.G., K.J. Gallagher, and Z. Santner, "Effect of Some Formulated Insecticides on Pollen Germination in Tomato and Petunia," J. Econ. Ent. 64(4):916-919 (1971).

<3195>
CHEMICAL NAME: Phosphoric acid, 2-chloro-3-(diethylamino)-1-methyl-3-oxo-1-propenyl dimethyl ester
CHEMICAL COMMON NAME: Phosphamidon
PLANT: Tinda (CITRULLUS VULGARIS); Bottlegoard; Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.03 and 0.04 %
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Leaf spots within 3 days at 0.4 % application rate on all three species
COMMENTS: Safe (non-phytotoxic) insecticides on the cucurbits were DDVP, carbaryl, malathion, endosulfan, thiometon, and phosphamidon
REFERENCE: Sood, N.K., U.K. Kaushik, and V.S. Rathore, "Phytotoxicity of Modern Insecticides to Cucurbits," Indian J. Hort. 29(1):111-113 (1972)

<3196>
CHEMICAL NAME: Phosphoric acid, 2-chloro-3-(diethylamino)-1-methyl-3-oxo-1-propenyl dimethyl ester
CHEMICAL COMMON NAME: Phosphamidon
PLANT: Cabbage, Chinese (BRASSICA PEKINENSIS)
EXPERIMENTAL DOSE: 0.3 kg/ha
APPLICATION METHODS: Insecticidal spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; pollen collected at various times after application; evaluation time--6 hr to 21 da
EFFECTS: Significant pollen sterility for 6 hr to 14 da
COMMENTS: Most insecticides affected pollen viability only for first 4-5 days, except a few which affected it even up to 12 or 15 days
REFERENCE: Lal, O.P., "Insecticidal Sprayings Causing Pollen Sterility in Chinese Cabbage," Act. Agron. Acad. Scient. Hungar. 24:145-147 (1975).

<3197>
CHEMICAL NAME: Phosphoric acid, 2-chloro-3-(diethylamino)-1-methyl-3-oxo-1-propenyl dimethyl ester
CHEMICAL COMMON NAME: Phosphamidon
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 4 lb/gal liquid formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Growth reduction at 0.25%, foliar damage at all concentrations
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3198>
<3198>
CHEMICAL NAME: Phosphoric acid, 2-chloro-3-(diethylamino)-1-methyl-3-oxo-1-propenyl dimethyl ester
CHEMICAL COMMON NAME: Phosphamidon
PLANT: Begonia (BEGONIA sp.); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Cineraria; Coleus (COLEUS BLUMEI); Cyclamen; Geranium; Polyanthus; St. Paulia; Violet (VIOLA sp.)
EXPERIMENTAL DOSE: 16 fl oz/100 gal
APPLICATION METHODS: Foliage sprays and root drenches at once, twice and five times normal dosages; equivalent amount of wetting agent added; normal active ingredient in spray and drench, 0.02%
EXPERIMENTAL CONDITIONS: Greenhouse and field study; treatments replicated 3 times; sprays applied til plants thoroughly drenched; root drenches applied at rate of 1/4 pint solution per 5-in. pot and 1/2 pint per 10-in. pot
EFFECTS: Begonia--0.04% drench, leaf edge necrosis and some lamina scorch, no effect at 0.10% spray; crysanthemum--0.04% drench, leaf damage; cineraria--0.04% drench and 0.02% spray, leaf edge and lamina scorch; coleus--0.02 drench and 0.04% spray, speckle of leaf edge and lamina and patchy scorch with some interveinal discoloration; geranium--0.10% spray and drench, leaf scorch and chlorosis; polyanthus--0.10% spray and drench, leaf scorch and chlorosis; violet--0.02% spray, necrotic patches on lamina and edges of leaves; no damage to cyclamen and St. Paula at 0.10% (5 times normal dose)
COMMENTS: Values under effects are minimum phytotoxic dosages
REFERENCE: Dennis, E.B. and C.A. Edwards, "Phytotoxicity of Insecticides and Acaricides II. Flowers and Ornamentals," Plant Pathol. 12:27-36 (1963).

<3199>
CHEMICAL NAME: Phosphoric acid, 2-chloroethyl 2,2-dichlorovinyl ethyl ester
CHEMICAL COMMON NAME: G-34696
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time--11 da
EFFECTS: Minimum lethal concentration 6.21 to 5.15 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<3200>
CHEMICAL NAME: Phosphoric acid, 2,2-dichloroethenyl dimethyl ester
CHEMICAL COMMON NAME: DDVP
PLANT: Tinda (CITRULLUS VULGARIS); Bottlegoard; Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.03 and 0.04 %
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Slight leaf spot development on two species at either concentration; no injury to tinda
COMMENTS: Safe (non-phytotoxic) insecticides on the cucurbits were DDVP, carbaryl, malathion, endosulfan, thiometon, and phosphamidon
REFERENCE: Sood, N.K., U.K. Kaushik, and V.S. Rathore, "Phytotoxicity of Modern Insecticides to Cucurbits," Indian J. Hort. 29(1):111-113 (1972)

<3201>
CHEMICAL NAME: Phosphoric acid, 2,2-dichloroethenyl dimethyl ester
CHEMICAL COMMON NAME: Dichlorovos
PLANT: Cabbage, Chinese (BRASSICA PEKINENSIS)
EXPERIMENTAL DOSE: 0.5 kg/ha
APPLICATION METHODS: Insecticidal spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; pollen collected at various times after application; evaluation time--6 hr to 21 da
EFFECTS: Significant pollen sterility for 6 hr to 14 da
COMMENTS: Most insecticides affected pollen viability only for first 4-5 days, except a few which affected it even up to 12 or 15 days
REFERENCE: Lal, O.P., "Insecticidal Sprayings Causing Pollen Sterility in Chinese Cabbage," Act. Agron. Acad. Scient. Hungar. 24:145-147 (1975).

<3202>
CHEMICAL NAME: Phosphoric acid, 2,2-dichloroethenyl dimethyl ester
CHEMICAL COMMON NAME: Dichlorvos
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.025, 0.05, and 0.10%
APPLICATION METHODS: As spray in 625 l./ha of spray material; postemergence on 42-day old crop
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: Safe at 0.025%; mild at 0.05%, 40% of leaves affected after 3 and 6 days; mild at 0.10%, 80% of leaves affected after 3 and 6 days
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadyan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<3203>
CHEMICAL NAME: Phosphoric acid, 2,2-dichloroethenyl dimethyl ester
CHEMICAL COMMON NAME: Dichlorvos
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray 60 psi; 800 ml application to 4 plants; 11.6 lb/gal technical grade formulation and EC formulation containing 4 lb/gal technical grade dichlorvos
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No effect on growth; 0.25 and 0.125% EC caused negligible leaf tip burn
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3204>
CHEMICAL NAME: Phosphoric acid, 2,2-dichloroethenyl dimethyl ester
CHEMICAL COMMON NAME: DDVP
PLANT: Orange, sweet (CITRUS SINENSIS); Tomato (LYCOPERSICON ESCULENTUM); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 2.5 to 10.0 l./ha
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effect on citrus and slight leaf damage of tomato and Graminaceae
COMMENTS: No phytotoxicity on citrus, provided diameter of droplets did not exceed about 200 microns; on soft plants such as tomatoes and Graminaceae, small points of necrosis occurred with an area equivalent to impacts
REFERENCE: Perrot, J., "An Outline of Recent and Future Developments of Locust Control in Morocco," Proc. Int. Study Conf. Current and Future Prob. of Acridology 1:413-419 (1972).

<3205>
CHEMICAL NAME: Phosphoric acid, 2,2-dichloroethenyl dimethyl ester
CHEMICAL COMMON NAME: Dichlorvos
PLANT: Tomato (LYCOPERSICON PIMPINELLIFOLIUM); Tomato (LYCOPERSICON PERUVIANUM); Tomato (LYCOPERSICON HIRSUTUM); Tomato (LYCOPERSICON ESCULENTUM); Petunia (PETUNIA sp.)
EXPERIMENTAL DOSE: 1000 ppm; EC
APPLICATION METHODS: Added (spray) to agar medium disk to run-off
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--15 hr; pollen germinated and length of germination tube measured
EFFECTS: Reduced germination and pollen tube growth
COMMENTS: Germination of petunia and tomato pollen completely inhibited by topical applications of naled; reduction in germination and tube elongation of pollen caused by parathion, azinphosmethyl, difocol, endosulfan, dichlorvos, DDT, and gardona
REFERENCE: Gentile, A.G., K.J. Gallagher, and Z. Santner, "Effect of Some Formulated Insecticides on Pollen Germination in Tomato and Petunia," J. Econ. Ent. 64(4):916-919 (1971).

<3206>
CHEMICAL NAME: Phosphoric acid, 3-(dimethylamino)-1-methyl-3-oxo-1-propenyl dimethyl ester
CHEMICAL COMMON NAME: Dicrotophos
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml applied to 4 plants; 7.9 lb/gal technical Bidrin (Dicrotophos) formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Significant growth retardation at 0.062% technical grade; serious foliar damage after first spray treatment
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3207>
CHEMICAL NAME: Phosphoric acid, 3-(methoxymethylamino)-1-methyl-3-oxo-1-propenyl dimethyl ester, (E)-
CHEMICAL COMMON NAME: C-2307
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: At higher rate, plant kill with total stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3208>
<3208>
CHEMICAL NAME: Phosphorodithioic acid, S-[2-(2-methyl-1-piperidinyl)-2-oxoethyl] O,O-dipropyl ester
CHEMICAL COMMON NAME: C-19490
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 5.6, 8.4 and 11.2 kg/ha
APPLICATION METHODS: Postemergence sprays applied with CO(2) sprayer in 356 l./ha water containing 0.7% Aerosol OT surfactant
EXPERIMENTAL CONDITIONS: Field experiments; fall trials; randomized complete block design with 4 replications; plots--1.5 X 9.0 m
EFFECTS: Significant height reduction after 22 days at all rates; no significant color change after 22 days
COMMENTS: Greenhouse experiments determined chemicals used in field tests; not recommended for lawn use
REFERENCE: Elkins, D.M., J.A. Tweedy, and D.L. Suttner, "Chemical Regulation of Grass Growth. II. Greenhouse and Field Studies with Intensively Managed Turfgrasses," Agron. J. 66:492-497 (1974).

<3209>
CHEMICAL NAME: Phosphorodithioic acid, O-ethyl S,S-dipropyl ester
CHEMICAL COMMON NAME: Ethoprophos
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1, 2, and 4 lb/A
APPLICATION METHODS: In 7-in. bands over row and in drill hole with seed
EXPERIMENTAL CONDITIONS: Plano silt loam; plots--single 40-in. rows 40 ft long, randomized block design and 3 or 4 replicates; field studies; yields determined as indication of growth
EFFECTS: Band application at 4 lb/A caused 19.3% yield reduction; drill hole application, 51.7, 70.6, and 83.7% yield reduction at 1, 2, and 4 lb/A, respectively
COMMENTS: Most toxic insecticide tested; commonly used dosages, 0.75 to 1.0 lb/A
REFERENCE: Apple, J.W., "Response of Corn to Granular Insecticides Applied to the Row at Planting," J. Econ. Entomol. 64(5):1208-1211 (1971).

<3210>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Plants; Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preplant incorporation (2 in. soil depth)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--aprox. 3 mos
EFFECTS: Moderate control of weeds and no adverse effect on chrysanthemum yield
COMMENTS: Excellent weed control obtained with number of herbicides; only R-7465 and diphenamid used as soil surface treatments and bensulide gave unsatisfacotry control; various herbicide treatments found to affect growth of chrysanthemum plants to different degrees
REFERENCE: Welker, W.V. and J.C. Cialone, "An Evaluation of Herbicides for the Control of Weeds in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 26:51-54 (1972).

<3211>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 14 and 28 kg/ha
APPLICATION METHODS: Granular application with calibrated 0.9 m-wide lawn spreader; preemergence application in July and in February
EXPERIMENTAL CONDITIONS: Emory clay loam soil; 4 year experiment with fourth year used to determine recovery — no herbicide application; randomized complete block design with 3 replications and a check; plots measured 0.9 by 4.8 m with 0.3-m border between plots; no border between replications; injury determined by sod loss and foliar damage; lowest rates of application halved, plots treated with high rates applied four times
EFFECTS: First year -- slight foliage browning, no sod lost; second year -- slight browning of foliage; third year -- browning more persistent especially at 28 kg/ha application; fourth year -- persistence of foliage wilt at low rates, slight browning and sod loss at high rates
COMMENTS: In general, herbicide effectiveness increases with consecutive annual applications
REFERENCE: Callahan, L.M., "Phytotoxicity of Herbicides to a Tifgreen Bermudagrass Green," Weed Sci. 24(1):92-98(1976).

<3212>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 4% EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate control of all weeds with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<3213>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Plants
EXPERIMENTAL DOSE: 3.0 to 15.0 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays
EXPERIMENTAL CONDITIONS: Field studies; time period--1967 to 1969; soils--Ramona sandy loam and Greenfield
EFFECTS: In preemergence applications, effective control of all weeds at 9.0 and 12.0 lb/A and slight damage to asparagus; in postemergence, slight control of weeds at 12.0 and 15.0 lb/A
COMMENTS: Chemicals which killed or severely damaged asparagus include monuron, diuron, simazine, sinbar, sindone-B, treflan, tenoran, and CIPC; vegiben marginal; of herbicides tested in these trials for pre-emergence weed control in direct-seeded asparagus, balan, bensulide, and brominal offer most promising results
REFERENCE: Whiting, F.L., F.H. Takatori, and J.M. Lyons, "Weed Control in Asparagus," Calif. Agric. 25(1):4-5 (1971).

<3214>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preplant spray with soil incorporation (3 in. depth) by rototilling; combined herbicides and types of applications studied; 4% EC
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7
EFFECTS: Slight control of crabgrass and moderate control of remaining weeds with no damage to cucumber and slight damage to squash
COMMENTS: Control of crabgrass, pigweed, ragweed and lambsquarters in seeded cucumbers and squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence, and preemergence applications of chloramben methyl ester alone; in cucumbers only, bensulide preplant incorporated + chloramben methyl ester preemergence, bensulide preplant incorporated + dinoseb preemergence over activated charcoal, and nitralin preemergence gave excellent full-season weed control
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<3215>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in all plants at 1 ppm, less than 50% in cucumber but 50% or greater inhibition in sorghum and oat at 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 ppm, less than 50% in oat but 50% or greater in sorghum at 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<3216>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Grasses; Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 6 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared June of the following year; single row plots, 5 by 36 ft; cucumbers seeded 1 day after seedbed preparation; plots harvested 2 months after planting
EFFECTS: Good control of grasses and purslane; fair control of pigweed; minor cucumber injury
COMMENTS: Bensulide in combination with other herbicides also reported
REFERENCE: Noll, C.J., "Weed Control in Cucumbers in a Conventional Planting and in a Stale Seed Bed," Proc. Northeast. Weed Sci. Soc. 31:248-251 (1977).

<3217>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Bermudagrass, common (CYNODON DACTYLON); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 3.4 kg/ha
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: 3-year test on golf courses, 1-year test at Georgia Experiment Station; variety of

<3217>
<3217> CONT.
loam soils; DCPA, benefin, terbutol, and bensulide used used as chemical checks; summer tests; 1.5 X 3.0 m plots, randomized complete block design with 4 replications
EFFECTS: 88% avg. crabgrass control for 10 years (69-98% range); no significant effect on bluegrass or bermudagrass
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<3218>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Bermudagrass, common (CYNODON DACTYLON); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.75 lb/A
APPLICATION METHODS: Preemergence broadcast treatment in 40 gpa
EXPERIMENTAL CONDITIONS: 3-year experiment; Cecil sandy loam; application in July, August, September, and October of all 3 years (1971-1973); 5 X 10 ft plots, split-plot design--dates of treatment as main plots, herbicide treatments as subplots with 4 replications; ratings made year following treatment
EFFECTS: October application--95% control when ratings made in August the following year; July application, 31% control; August application, 53% control; September application, 69% control
COMMENTS: Fall overseeding, bensulide application necessary two months prior for optimum turfgrass seed germination--reduced crabgrass control; no mention of bermudagrass toxicity
REFERENCE: Johnson, B.J., "Crabgrass Control in Common Bermudagrass Turf from Herbicides Applied the Previous Year," Ga. Agric. Res. 17(2):17-18 (1975).

<3219>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 3.4 and 5.6 kg/ha
APPLICATION METHODS: Preplanting treatment incorporated to 7.6 cm depth; September application
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: No excessive legume injury; weeds not controlled
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<3220>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Squash, summer (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence; postemergence application of BAS-3512 H only
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7; time period--1972
EFFECTS: Effective control of ragweed; slight to moderate control of other weeds; no damage to cucumber; slight damage to squash
COMMENTS: Effective control of large crabgrass, redroot pigweed, common ragweed and lambsquarters in seeded cucumbers and summer squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence and preemergence applications of chloramben methyl ester alone
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<3221>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bluegrass, annual (POA ANNUA);
EXPERIMENTAL DOSE: 10.0 lb/A; 3.6% G
APPLICATION METHODS: Broadcast (G) with spreader; preemergence spray, 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; mature Kentucky bluegrass lawn; soils-sandy and loam; crabgrass seed sown on lawn just prior to applications
EFFECTS: Moderate to effective weed control
COMMENTS: A-820, CG-10832, PPG-139 and RP-17623 gave good crabgrass control; April versus May application of several of preemergence types show that specific guidelines are needed to obtain efficient crabgrass control; goosegrass control fair to good for several chemicals, but all materials considered poor to unsatisfactory
REFERENCE: Engel, R.E., C.W. Bussey, and P. Catron, "Crabgrass and Goosegrass Control in Turfgrass with Several Preemerge Herbicides," Proc. Northeast. Weed Sci. Soc. 29:369-371 (1975).

<3222>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Cucumber (CUCUMIS SATIVUS); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 6.7 and 9.0 kg/ha
APPLICATION METHODS: Preplant spray; 170 l./ha; soil incorporation (5 cm depth); preemergence sprays for nitralin and chloramben
EXPERIMENTAL CONDITIONS: Field study; soil--Faison fine sandy loam; two locations; time period--1967 and 1968; evaluation time--25 da
EFFECTS: Moderate control of weeds at both concentrations with no injury to lettuce
COMMENTS: DCPA and nitralin gave best weed control, while benefin and the methyl ester of chloramben less

<3222> CONT.
effective in controlling weeds; poorest weed control performance observed with bensulide; nitralin, DCPA, benefin, and methyl ester of chloramben caused crop injury if leaching rains followed application; despite early herbicide injury, yields usually not adversely affected
REFERENCE: Monaco, T.J. and Miller, C.H., "Herbicide Activity in Pickling Cucumber," Weed Sci. 20(6):545-548 (1972).

<3223>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulfide
PLANT: Squash, summer (CUCURBITA PEPO); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass (DIGITARIA sp.); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 4.0 and 6.0 lb/A
APPLICATION METHODS: Preplant application with soil incorporation; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Poor to moderate control of broadleaf weeds; moderate to effective control of grasses; slight reduction in squash vigor
COMMENTS: Outstanding preplant incorporated treatment was bensulide followed by chloramben, methyl ester applied preemergence; outstanding preemergence treatment for both weed control and yield was chloramben, methyl ester + asulam; crop injury induced by following preplant incorporated treatments: dibutalin, dinitramine (USB 3584), nitralin, and bensulide followed by naptalam applied preemergence
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "Some Promising Herbicides for Weed Control in Summer Squash," Proc. Northeast. Weed Sci. Soc. 28:224-228 (1974).

<3224>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Grape (VITIS VINIFERA)
EXPERIMENTAL DOSE: 100 and 1000 mg/l.
APPLICATION METHODS: Exposed plant roots placed in 1.0 liter herbicide solution for 1 hr; EC formulation
EXPERIMENTAL CONDITIONS: Pot studies; plastic pot (holes in bottom) with plant placed on top of another pot containing soil; after root growth through holes into second pot, plants carefully removed and placed on top of pot containing herbicide solution; 1-hr herbicide exposure
EFFECTS: No kill of roots and no appreciable systemic foliage injury
REFERENCE: Ahrens, J.F., O.A. Leonard, and N.R. Townley, "Chemical Control of Tree Roots in Sewer Lines," J. Water Pollut. Control Fed. 42(9):1643-1655 (1970).

<3225>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Sesame (SESAMUM INDICUM); Pigweed (AMARANTHUS sp.); Barley (HORDEUM VULGARE); Millet, Japanese (ECHINOCHLOA FRUMENTACEA)
EXPERIMENTAL DOSE: 4.0, 5.0, and 6.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley, mustard, and Japanese millet planted as weed crop
EFFECTS: Good tolerance to sesame and good control of pigweed and millet at 5 lb/A, 4 and 6 lb/A gave good sesame tolerance and poor barley control; broadleaf weed control erratic
COMMENTS: Nominal mustard stand even in untreated plots
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<3226>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Pepper, hot (CAPSICUM ANNUUM); Santa Maria (PARTHENIUM HYSTEROPHORUS); Nutsedge, purple (CYPERUS ROTUNDUS); (CLEOME CILIATA); (BOERHAVIA DIFFUSA); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); Pinkroot (SPIGELIA ANTHELMIA); Junglerice (ECHINOCHLOA COLONUM); Wiregrass (ELEUSINE INDICA); Sandbur (CENCHRUS ECHINATUS)
EXPERIMENTAL DOSE: 5 kg/ha
APPLICATION METHODS: Preplanting incorporated treatment
EXPERIMENTAL CONDITIONS: Seed bed trial; application 3 days before sowing
EFFECTS: Treatment not considered satisfactory
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<3227>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulfide
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 10.0 lb/A; G
APPLICATION METHODS: Preemergence broadcast spreader (G) and spray (WP); 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; established turf with seeding of crabgrass prior to herbicide applications
EFFECTS: Moderate control of crabgrass and no effect on goosegrass and bluegrass with slight thinning of bent

<3227>
<3227> CONT.
COMMENTS: A-820, CGA-10832, and RP-17623 experimental herbicides useful new preemergence herbicides in comparison with commercially available herbicides; two new aniline herbicides have some advantages
REFERENCE: Engel, R.E., C.W. Bussey, and R.D. Ilnicki, "Control of Crabgrass DIGITARIA Species and Goosegrass ELEUSINE INDICA in Turf with Experimental Preemergence Herbicides," Proc. Northeast. Weed Soc. 27:324-330 (1973).

<3228>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2[(phenylsulfonyl)-amino]ethyl] ester
CHEMICAL COMMON NAME: Bensulide
PLANT: Centipede grass (EREMOCHLOA OPHIUROIDES); Bermudagrass, Tifton (CYNODON sp.); Bermudagrass (CYNODON sp.); Zoysiagrass (ZOYSIA JAPONICAA); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 11.2 kg/ha
APPLICATION METHODS: Preemergence spray; 376 l./ha except benefit which was mixed with sand and applied by hand
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy clay loam; turfgrass sprig-planted; herbicides applied 2 to 3 days after planting; time period--1972 to 1974; evaluation time--16.5 mo
EFFECTS: Slight to moderate effects on turfgrasses with moderate to effective control of grassy weeds and slight control of broadleafs
COMMENTS: Bensulide only herbicide that satisfactorily controlled grassy weeds during first growing season both years; turfgrass generally grew as well or better in untreated than treated plots
REFERENCE: Johnson, B.J., "Minimal Herbicide Treatments on the Establishment of Four Turfgrasses,," Agron. J. 67(1):786-789 (1975).

<3229>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2-[(phenylsulfonyl)amino]ester]
CHEMICAL COMMON NAME: Betasan
PLANT: Bluegrass, annual (POA ANNUA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 15.0 lb/A
APPLICATION METHODS: Preplant solution soak
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Puyallup fine sandy loam; pH--5.8; temperature--approx 60 F
EFFECTS: Effective bluegrass control (one exp) with no adverse effect on bentgrass
COMMENTS: Dacthal, betasan, dipropalin, trifluralin, and enide significantly controlled annual bluegrass for periods of 9 to 12 weeks; dacthal and betasan completely nonphytotoxic to mature turf
REFERENCE: Goss, R.L., "Preemergence Control of Annual Bluegrass (POA ANNUA L.)," J. Agron. 56(1):479-481 (1964).

<3230>
CHEMICAL NAME: Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
CHEMICAL COMMON NAME: Phorate
PLANT: Spangletop, bearded, (LEPTOCHLOA FASCICULARIS)
EXPERIMENTAL DOSE: 5.6 to 33.6 kg/ha
APPLICATION METHODS: Preplant incorporated (3 to 4 cm depth) by subsurface insecticide applicator; 10% G formulation
EXPERIMENTAL CONDITIONS: Field study; rutabagas harvested after 60 days at 30-day intervals thereafter; whole, sliced, and peelings used to evaluate insecticide persistence with first instar maggots of HYLEMA BRASSICAE
EFFECTS: Undefined phytotoxic effect on rutabagas at higher application rates
COMMENTS: At high rates, phytotoxicity recorded for all compounds except trichloronat and fonofos; phytotoxicity so severe with AC64475 that all plants destroyed with rates in excess of 11.2 kg/acre
REFERENCE: Read, D.C., "Toxicity of Carbamate and Organophosphorus Insecticide Residues Absorbed by Rutabagas Grown in Treated Soil," Can. Entmol. 106(7):1319-1325 (1974).

<3231>
CHEMICAL NAME: Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
CHEMICAL COMMON NAME: Phorate
PLANT: Cotton (GOSSYPIUM BARBADENSE)
EXPERIMENTAL DOSE: 0.5, 0.92, and 1.0 lb/A; 1 lb/bushel of seed
APPLICATION METHODS: Seed treatments
EXPERIMENTAL CONDITIONS: Field studies, 3 years; mechanically-delinted seed planted at rate of 32 lb/A, acid-delinted seed planted at rate of 25 lb/A; randomized block design experimental arrangement; insect present, thrips (FRANKLINIELLA FUSCA and F. TRITICI)
EFFECTS: No phytotoxic effect at 1 lb/bushel rate; lb/A treatments showed some inhibition of early growth and delayed fruiting, no significant yield reduction at any treatment
COMMENTS: Trade name, Thimet
REFERENCE: Hanna, R.L., "Insecticidal Seed Treatments for Cotton," J. Econ. Entomol. 51(2):160-163 (1958).

<3232>
CHEMICAL NAME: Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
CHEMICAL COMMON NAME: Phorate
PLANT: Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 25, 50, 75 and 100 ppm; xylene emulsion (100 ppm)
APPLICATION METHODS: Solution addition to filter paper in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--75 F; evaluation time--48 hr; germinated seed selected and exposed
EFFECTS: Reduced root growth at 25 ppm and higher concentrations; field study essentially corroborated results
COMMENTS: Phytotoxic effect of insecticide fertilizer mixtures attributed to fertilizer which interferred with uptake of water required by seed for germination, or to insecticide or solvent which may cause

<3232> CONT.
seedling damage; phorate and diazinon were more phytotoxic than Trithion or heptachlor in field and laboratory tests: insecticide solvent Velsicol AR-60 was more phytotoxic than xylene--depressed seedling emergence significantly in the field
REFERENCE: Allen, W.R., W.L. Askew, and K. Schreiber, "Effect of Insecticide Fertilizer Mixtures and Seed Treatments on Emergence of Sugar Beet Seedlings," J. Econ. Ent. 54(1):181-187 (1961).

<3233>
CHEMICAL NAME: Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
CHEMICAL COMMON NAME: Phorate
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.25, 0.5, and 1.0 lb/A
APPLICATION METHODS: 15% G and 6% EC formulations; postemergence--late-whorl stage and early-boot stage; preemergence treatments also
EXPERIMENTAL CONDITIONS: Experiment 1--11 treatments, 2 rows by 30 ft plots, application July 30 to late-whorl stage of sorghum; experiment 2--7 treatments, 2 rows by 25 ft plots, August 7 insecticide application to early-boot stage of sorghum; experiment 3--27 treatments, 2 rows by 50 ft plots, preemergence treatment, phytotoxicity measured by plant emergence; randomized complete block design with 3 replicates; test compound is insecticide
EFFECTS: No reported toxicity
COMMENTS: Insecticide applied for greenbug control
REFERENCE: Depew, L.J., "Further Evaluation of Insecticides for Greenbug Control on Grain Sorghum in Kansas," J. Econ. Entomol. 65(4):1095-1098 (1972).

<3234>
CHEMICAL NAME: Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
CHEMICAL COMMON NAME: Phorate
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1/100, 1/75, 1/50, 1/25, 1/12, 1/6, 1/3, 2/3, and 1 lb/A
APPLICATION METHODS: 6% EC formluation; application at rate of 60 gpa in seed furrows at planting
EXPERIMENTAL CONDITIONS: Keith silt loam; 4 rows by 30 ft plots; randomized block design with 3 replications; June 16 seeding and insecticide treatment; emergence counts taken 11 days after seeding
EFFECTS: 2/3 and 1 lb/A significantly reduced emergence when compared with untreated check; other treatments had no significant effects
COMMENTS: Test compound used for greenbug control
REFERENCE: Depew, L.J., "Effect of In-Furrow Treatments of Three Systemic Insecticides on Grain Sorghum Emergence," J. Econ. Entomol. 64(5):1321-1322 (1971).

<3235>
CHEMICAL NAME: Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
CHEMICAL COMMON NAME: Phorate
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1, 2, 4, and 8 lb/A
APPLICATION METHODS: In 7-in. bands over row and in drill hole with seed
EXPERIMENTAL CONDITIONS: Plano silt loam; plots--single 40-in. rows 40 ft long, randomized block design and 3 or 4 replicates; field studies; yields determined as indication of growth
EFFECTS: No influence on corn yield from 7-in. band application; drill hole application--phytotoxic effect evident at 2 lb/A, 19.6% yield reduction at 8 lb/A
REFERENCE: Apple, J.W., "Response of Corn to Granular Insecticides Applied to the Row at Planting," J. Econ. Entomol. 64(5):1208-1211 (1971).

<3236>
CHEMICAL NAME: Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
CHEMICAL COMMON NAME: Phorate
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 lb/A; 10% G and 6 lb/A EC
APPLICATION METHODS: Granules in seed furrow and layby side dressing; postemergence spray for liquid applications; six application methods; multiple applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effect on growth or yield of soybean
COMMENTS: Stand counts revealed germination not affected by application of preplant granules; measurement made after foliar spray application at midbloom was only one to show significant differences among treated plots; plants taller in plots treated with disulfoton or check plots
REFERENCE: Wheeler, B. A. and M. H. Bass, "Effects of Certain Systemic Insecticides on Growth and Yield of Soybeans," J. Econ. Ent. 64(5):1219-1221 (1971).

<3237>
CHEMICAL NAME: Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
CHEMICAL COMMON NAME: Phorate
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: At higher rate, moderate leaf damage with slight stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9

<3237>
<3237> CONT.
organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3238>
CHEMICAL NAME: Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
CHEMICAL COMMON NAME: Disulfoton
PLANT: Bean, mung (PHASEOLUS AUREUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 to 100 ppm; 0.02% Triton-B-1956 or 2.0% DMSO
APPLICATION METHODS: Placed in petri plates on double filter paper with solutions added
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination and 120-hour seedling growth; 30 C in dark
EFFECTS: At 100 or 200 ppm, significant reduction of germination and seedling growth for both test species with varied biochemical alterations
COMMENTS: Suppressed germination and seedling growth as result of impaired respiration, starch, and protein degradation; inhibited development of amylase and ATPase activities during germination; effects more pronounced in wheat than in mung beans
REFERENCE: Dalvi, R.R., B. Singh, and D.K. Salunkhe, "Influence of Selected Pecticides on Germination and Associated Metabolic Changes in Wheat and Mung Bean Seeds," J. Agric. Food Chem. 20(5):1000-1003 (1972).

<3239>
CHEMICAL NAME: Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
CHEMICAL COMMON NAME: Disulfoton
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.25, 0.5, and 1.0 lb/A
APPLICATION METHODS: 6% LC and 15% G formulations; postemergence--late-whorl stage and early-boot stage; preemergence treatments also
EXPERIMENTAL CONDITIONS: Experiment 1--11 treatments, 2 rows by 30 ft plots, application July 30 to late-whorl stage of sorghum; experiment 2--7 treatments, 2 rows by 25 ft plots, August 7 insecticide application to early-boot stage of sorghum; experiment 3--27 treatments, 2 rows by 50 ft plots, preemergence treatment, phytotoxicity measured by plant emergence; randomized complete block design with 3 replicates; test compound is insecticide
EFFECTS: No reported toxicity
COMMENTS: Insecticide applied for greenbug control
REFERENCE: Depew, L.J., "Further Evaluation of Insecticides for Greenbug Control on Grain Sorghum in Kansas," J. Econ. Entomol. 65(4):1095-1098 (1972).

<3240>
CHEMICAL NAME: Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
CHEMICAL COMMON NAME: Disulfoton
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1/100, 1/75, 1/50, 1/25, 1/12, 1/6, 1/3, 2/3, and 1 lb/A
APPLICATION METHODS: 6% EC formluation; application at rate of 60 gpa in seed furrows at planting
EXPERIMENTAL CONDITIONS: Keith silt loam; 4 rows by 30 ft plots; randomized block design with 3 replications; June 16 seeding and insecticide treatment; emergence counts taken 11 days after seeding
EFFECTS: 2/3 and 1 lb/A significantly reduced emergence when compared with untreated check; other treatments had no significant effects
COMMENTS: Test compound used for greenbug control
REFERENCE: Depew, L.J., "Effect of In-Furrow Treatments of Three Systemic Insecticides on Grain Sorghum Emergence," J. Econ. Entomol. 64(5):1321-1322 (1971).

<3241>
CHEMICAL NAME: Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
CHEMICAL COMMON NAME: Disulfoton
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 lb/A; 15% G and 6 lb/gal EC
APPLICATION METHODS: Granules in seed furrow and layby side dressing; postemergence spray for liquid applications; six application methods; multiple applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effect on growth or yield of soybean
COMMENTS: Stand counts revealed germination not affected by application of preplant granules; measurement made after foliar spray application at midbloom was only one to show significant differences among treated plots; plants taller in plots treated with disulfoton or check plots
REFERENCE: Wheeler, B. A. and M. H. Bass, "Effects of Certain Systemic Insecticides on Growth and Yield of Soybeans," J. Econ. Ent. 64(5):1219-1221 (1971).

<3242>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl ester
CHEMICAL COMMON NAME: Azinphos-methyl
PLANT: Spruce, Colorado (PICEA PUNGENS)
EXPERIMENTAL DOSE: X, 5X, 20X, 40X and >70X (X = 2.0 lb/gal added to 100 gal)
APPLICATION METHODS: 3 droplets placed on picked fruit
EXPERIMENTAL CONDITIONS: Laboratory study; fruit with stems; stems inserted through vial cap into water; temperatures -- 60, 70, 80, and 90 F; evaluation time -- 3 days
EFFECTS: Necrosis of fruit resulting in spotting
COMMENTS: Azinphosmethyl and dodine caused injury to fruits while DFN did not; azinphosmethyl-DFN mixtures as

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injurious as azinphosmethyl alone; when azinphosmethyl was mixed with dodine, injury greater than with either chemical alone; phytotoxicity was absent or slight at dilute concentrations but increased in severity with concentration to 70X and with temperature to 90 degrees F.
REFERENCE: Jones, A.L., "Phytotoxicity of Dodine and Azinphosmethyl to Cherry Fruit," Plant Dis. Rep. 57(5):428-431 (1973).

<3243>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl] ester
CHEMICAL COMMON NAME: Azinphos-methyl
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence spray; 4 gal/tree at 350 psi; repeat (3) applications; 2% EC Formulation
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: No adverse effect on peach fruit set
COMMENTS: Fruit counts with methyl parathion and azinphosmethyl significantly lower; carbaryl and monocrotophos treatments also less, but differences not statistically significant; no obvious differences in fruit size at maturity in various treatments, although fruit from trees sprayed with methyl parathion seemed 1-2 days slower in maturing
REFERENCE: Rice, R.E. and R.A. Jones, "Reduction of Fruit Set by Repeated Applications of Selected Insecticides to Peaches," Environ. Entom. 1(5):677-678 (1972).

<3244>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl] ester
CHEMICAL COMMON NAME: Azinphos-methyl
PLANT: Apple (PYRUS MALUS); Plum (PRUNUS sp.)
EXPERIMENTAL DOSE: 0.5, 1.0, and 1.25 lb/100 gal
APPLICATION METHODS: Dilute spray application by hydraulic sprayer at 35 gal/min and 450-600 psi, 25 and 50% WP formulations
EXPERIMENTAL CONDITIONS: Field and laboratory tests; randomized complete block design with single tree plots; insecticide treatments replicated 3 to 4 times; sulfur, captan, or combination of both fungicides added with insecticides; multi-year experiments
EFFECTS: No phytotoxicity observed
COMMENTS: Main emphasis of study was control of plum curculio (CONOTRACHELUS NENUPHAR)
REFERENCE: Forsythe, H.Y., Jr. and F.R. Hall, "Control of the Plum Curculio in Ohio," J. Econ. Entomol. 65(6):1703-1706 (1972).

<3245>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl] ester
CHEMICAL COMMON NAME: Azinphos-methyl
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.33, 1.0, and 2.0 lb/A
APPLICATION METHODS: Spray equivalent of 15 gpa at 40 Psi; initially applied as plants began to bloom
EXPERIMENTAL CONDITIONS: Pot experiments; total of 7 applications for each of 3 groups of tests--initial treatment of 0.33 lb/A for each group followed by a second treatment of 0.33, 1.0, and 2.0 lb/A to groups 1, 2, and 3, respectively, then 5 treatments of 0.33 lb/A to each group; 6 plants per group
EFFECTS: No important differences between control and treated plants
COMMENTS: Trade name, Guthion
REFERENCE: Walker, J.K., Jr., J. Hacskaylo, and F.G. Pires, "Observations on Response of Greenhouse-Grown Cotton to Excessive Dosages of Phosphate Insecticides," J. Econ. Entomol. 57(5):782-783 (1964).

<3246>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl] ester
CHEMICAL COMMON NAME: Azinphos-methyl
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% WP formulation and 2 lb/gal technical azinphos-methyl formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No growth or foliar injury from WP formulation; EC formulation retarded growth and injured foliage
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3247>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl] ester
CHEMICAL COMMON NAME: Azinophosmethyl
PLANT: Tomato (LYCOPERSICON PIMPINELLIFOLIUM); Tomato (LYCOPERSICON PERUVIANUM); Tomato (LYCOPERSICON HIRSUTUM); Tomato (LYCOPERSICON ESCULENTUM); Petunia (PETUNIA sp.)
EXPERIMENTAL DOSE: 1000 ppm; EC
APPLICATION METHODS: Added (spray) to agar medium disk to run-off
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--15 hr; pollen germinated and length of germination tube measured
EFFECTS: Reduced germination and pollen tube growth

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<3247> CONT.
COMMENTS: Germination of petunia and tomato pollen completely inhibited by topical applications of naled; reduction in germination and tube elongation of pollen caused by parathion, azinphosmethyl, dicofol, endosulfan, dichlorvos, DDT, and gardona
REFERENCE: Gentile, A.G., K.J. Gallagher, and Z. Santner, "Effect of Some Formulated Insecticides on Pollen Germination in Tomato and Petunia," J. Econ. Ent. 64(4):916-919 (1971).

<3248>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CHEMICAL COMMON NAME: Dimethoate
PLANT: Tinda (CITRULLUS VULGARIS); Bottlegoard; Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.03 and 0.04 %
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Leaf spots within 3 or 7 days at both concentrations
COMMENTS: Safe (non-phytotoxic) insecticides on the cucurbits were DDVP, carbaryl, malathion, endosulfan, thiometon, and phosphamidon
REFERENCE: Sood, N.K., U.K. Kaushik, and V.S. Rathore, "Phytotoxicity of Modern Insecticides to Cucurbits," Indian J. Hort. 29(1):111-113 (1972)

<3249>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CHEMICAL COMMON NAME: Malathion
PLANT: Sarson, yellow (BRASSICA CAMPESTRIS)
EXPERIMENTAL DOSE: 0.25, 0.05, 0.1, 0.3, 0.5, 0.7, and 0.8%
APPLICATION METHODS: Seed treatments
EXPERIMENTAL CONDITIONS: Seeds soaked for 4 hours; 50 seeds germinated in Petri dishes; each treatment replicated 3 times, entire experiment replicated twice; observations every 24 hours up to 96 hours; height recorded after 96 hours
EFFECTS: 96% germination at 0.8%; slight stunting at 0.5%, slight stunting and yellowing at 0.7%, and stunting and yellowing at 0.8%
COMMENTS: Trade name, Malamar
REFERENCE: Tripathi, P.L. and M.M. Hague, "Studies on Seed Treatment with Insecticides I: Effect of Certain Organophosphorus Insecticides on Germination and Growth of Seedlings of Mustard," Indian Oilseeds J. 7(2):144-147 (1963).

<3250>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CHEMICAL COMMON NAME: Dimethoate
PLANT: Sarson, yellow (BRASSICA CAMPESTRIS)
EXPERIMENTAL DOSE: 0.25, 0.05, 0.1, 0.3, and 0.5%
APPLICATION METHODS: Seed treatments
EXPERIMENTAL CONDITIONS: Seeds soaked for 4 hours; 50 seeds germinated in Petri dishes; each treatment replicated 3 times, entire experiment replicated twice; observations every 24 hours up to 96 hours; height recorded after 96 hours
EFFECTS: Germination after 96 hours--100% at 0.05%, 95% at 0.3%, and 8% at 0.5%; slight stunting at 0.3%, growth completely inhibited at 0.5%
COMMENTS: Trade name, Rogor
REFERENCE: Tripathi, P.L. and M.M. Hague, "Studies on Seed Treatment with Insecticides I: Effect of Certain Organophosphorus Insecticides on Germination and Growth of Seedlings of Mustard," Indian Oilseeds J. 7(2):144-147 (1963).

<3251>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CHEMICAL COMMON NAME: Dimethoate
PLANT: Bean, broad (VICIA FABA); Cotton (GOSSYPIUM BARBADENSE)
EXPERIMENTAL DOSE: Bean--0.0625, 0.125, 0.25, and 0.5%; cotton--0.008, 0.016, 0.0313, 0.0625, 0.125, and 0.25%
APPLICATION METHODS: Seed treatment-seeds soaked in distilled water 24 hr, then soaked 24 hr in test solution; root treatment--roots immersed in solution for 4 hr; pure and formulated (40% active incredient) dimethoate
EXPERIMENTAL CONDITIONS: Cotton roots and seeds--formulated dimethoate treatment only; beanroots and seeds--formulated and pure dimethoate treatments; seeds washed with water after treatment, germination in Petri dishes; roots cut when 1.5-3.0 cm in length and fixed in acetic-alcohol (1:3); roots from root treatments also cut and fixed in acetic-alcohol; some roots from root treatments left to recover in distilled water 24,48, and 72 hr, then fixed in acetic alcohol
EFFECTS: Bean--pure and formulated treatments caused great decrease in miotic index, abnormal mitoses induced by formulated treatment higher than that induced by pure dimethoate, roots treated with pure dimethoate recovered faster than roots treated with formulated solution; dominant type of abnormalities in beans and cotton, disturbed prophases, meta- and anaphases; lagging chromosomes observed in both plants; chromosome contraction observed only in cotton; chromosome stickiness, chromosome fragmentation, anaphase bridges, and multipolar anaphases observed only in bean
COMMENTS: Trade name, Rogor
REFERENCE: Amer, S.M. and O.R. Farah, "Cytological Effects of Pesticides VI. Effect of the Insecticide 'Rogor' on the Mitosis of VICIA FABA and GOSSYPIUM BARBADENSE," Cytologia 39:507-514 (1974).

<3252>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CHEMICAL COMMON NAME: Dimethoate
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 1 qt/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to all species
COMMENTS: 4% EC formulation; trade name Cygon; rated very unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<3253>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CHEMICAL COMMON NAME: Dimethoate
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.25 lb/A
APPLICATION METHODS: 2.67% EC formulation; postemergence--late-whorl stage and early boot stage; preemergence treatments also
EXPERIMENTAL CONDITIONS: Experiment 1--11 treatments, 2 rows by 30 ft plots, application July 30 to late-whorl stage sorghum; experiment 2--7 treatments, 2 rows by 25 ft plots, August 7 insecticide application to early-boot stage of sorghum; experiment 3--27 treatments, 2 rows by 50 ft plots, preemergence treatment, phytotoxicity measured by plant emergence; randomized complete block design with 3 replicates; test compound is insecticide
EFFECTS: No reported toxicity
COMMENTS: Insecticide applied for greenbug control
REFERENCE: Depew, L.J., "Further Evaluation of Insecticides for Greenbug Control on Grain Sorghum in Kansas," J. Econ. Entomol. 65(4):1095-1098 (1972).

<3254>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CHEMICAL COMMON NAME: Dimethoate
PLANT: Bean, snap (PHASEOLUS VULGARIS); Bean, lima (PHASEOLUS LIMENSIS); Soybean (GLYCINE MAX); Corn (ZEA MAYS); Pea, sweet (PISUM SATIVUM); Pumpkin (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Added to seed uniformly and stored (23 C)
EXPERIMENTAL CONDITIONS: Greenhouse study; seed stored 3 mo after treatment prior to planting; soil--sandy loam; temperature--approx 27 C; evaluation time--7 and 10 da
EFFECTS: No adverse effect on germination or seedling growth
COMMENTS: Diazinon, CP-53926 and CP-47114 delayed and reduced germination of snap beans and lima beans; CP-53926 phytotoxic to soybeans; dimethoate and NIA-10242 did not adversely affect germination of any of crop seeds; peas, corn, and pumpkins did not appear affected by insecticide treatments
REFERENCE: Broersma, D. B. and W. H. Luckmann, "Seed Treatment Techniques and Phytotoxicity Studies on Some Grain and Vegetable Crops," J. Econ. .03):1-823 (1967).

<3255>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CHEMICAL COMMON NAME: Dimethoate
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 52.5, 210 and 840 ml/ha
APPLICATION METHODS: Aqueous emulsion spray of 400 l./ha volume
EXPERIMENTAL CONDITIONS: Frilsham Series soil (brown earth in loamy drift over chalky head); 2x6 m plots--each treatment replicated 3 times, controls replicated 15 times; sown seed rate of 20 kg/ha; duration--spring 1972 to fall 1973; fertilizer--377 kg/ha N first year, 250 kg/ha N second year; yield measured from one 1x15 m swath from center of each plot
EFFECTS: No injury--ryegrass yield increased
COMMENTS: Systemic effect, one of the least persistent insecticides under field conditions; application to edible crops, up to 7 days before harvesting
REFERENCE: Henderson, I.F. and R.O. Clements, "The Effect of a Short-Persistence Systemic Insecticide on the Yield of Perennial Ryegrass," J. Br. Grassl. Soc. 31:15-17 (1976).

<3256>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CHEMICAL COMMON NAME: Dimethoate
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 1 qt/100 gal--based upon concentration of formulation per 100 gal water
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to all species
COMMENTS: 4% EC formulation; trade name Cygon; rated very unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

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<3257>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CHEMICAL COMMON NAME: Dimethoate
PLANT: Cabbage, Chinese (BRASSICA PEKINENSIS)
EXPERIMENTAL DOSE: 0.3 kg/ha
APPLICATION METHODS: Insecticidal spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; pollen collected at various times after application; evaluation time--6 hr to 21 da
EFFECTS: Significant pollen sterility for 6 hr to 14 da
COMMENTS: Most insecticides affected pollen viability only for first 4-5 days, except a few which affected it even up to 12 or 15 days
REFERENCE: Lal, O.P., "Insecticidal Spravings Causing Pollen Sterility in Chinese Cabbage," Act. Agron. Acad. Scient. Hungar. 24:145-147 (1975).

<3258>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CHEMICAL COMMON NAME: Dimethoate
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% WP formulation and 2 lb/gal technical dimethoate EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Growth retardation and foliar injury
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3259>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CHEMICAL COMMON NAME: Dimethoate
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Prayer plant (MARANTA LEUCONEURA); Dracena (DRACAENA SANDERIANA); Sword-fern (NEPHPOLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
EXPERIMENTAL DOSE: 0.375 and 0.75 lb/100 gal
APPLICATION METHODS: Amount formulated--1.5 and 3.0 pints respectively; 4 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume equivalent); Plyac (spreader-sticker) added to controls and treatments at rate of 2 oz/100 gal water; sprays applied prior to 10:00 a.m.; 5 tests from May to November; temperture--83 to 98 F (day) and 56 to 78 F (night); greenhouse conditions
EFFECTS: A. SQUARROSA--no injury at 0.375 lb, slight injury at 0.75 lb (marginal chlorosis and necrosis); B. ACTINOPHYLLA--Severe injury at both rates (marginal chlorosis and necrosis, chlorotic and necrotic flecking, and leaf deformity); C. ELEGANS--no injury at either rate; D. PICTA--no injury at low rate, slight injury at high rate (marginal chlorosis and necrosis); D. SANDERIANA--no injury at either rate; M. LEUCONEURA--no injury at either rate; N. EXALTATA--slight injury at 0.375 lb (marginal chlorosis and necrosis, tip necrosis); moderate injury at 0.75 lb (growth suppression, marginal chlorosis and necrosis, and tip necrosis); P. OBTUSIFOLIA--no injury; P. OXYCARDIUM--no injury; S. AUREUS--no injury at 0.375 lb, slight injury at 0.75 lb (marginal chlorosis and necrosis)
COMMENTS: Experimental concentrations--recommended and twice the recommended rate
REFERENCE: Hamlen, R.A. and R.W. Henley, "Phytotoxicity to Tropical Foliage Plants of Repeated Insecticide and Miticide Applications Under Fiberglass-Covered Greenhouse Conditions," Proc. Fla. State Hort. Soc. 89:336-338 (1976).

<3260>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl S-[4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl] ester
CHEMICAL COMMON NAME: Azinphos-methyl
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 18 lb/A
APPLICATION METHODS: 720 lb/A applied as 2.5% G which equals 18 lb/A actual; preplanting treatment; first year treatment equivalent to 48 single applications, second and third year treatments equivalent to 8 single applications
EXPERIMENTAL CONDITIONS: Field stdy; Appling sandy loam soil; plots, 66 sq. ft.; randomized block design with 4 replicates; 3 year study; calcium arsenate applied to control boll weavil all 3 years, nicotine dust applied first year to control cotton aphid
EFFECTS: No significant differences in seedling number, plant height, number of blooms or yield compared to check
COMMENTS: Trade name, Guthion
REFERENCE: Roberts, J.E., R.D. Chisholm, and L. Koblitsky, "Persistence of Insecticides in Soil and Their Effects on Cotton in Georgia," J. Econ. Entomol. 55(2):153-155 (1962).

<3261>
CHEMICAL NAME: Phosphorodithioic acid, S-[(1,3-dihydro-1,3-dioxo-2H-isoindol-2-yl)methyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Phosmet
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.50 and 1.0 aigh
APPLICATION METHODS: 3 applications (0.50, 1.0, and 1.0 aihg), 7 days apart; 50% WP formulation
EXPERIMENTAL CONDITIONS: Cultivars--'deep snow pink', 'marguerita', 'neptune', 'nob hill', 'orange bowl', 'snow ridge', 'white Anne', and 'yellow Delaware', initial application August 25; injury recorded from highest rate applied

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EFFECTS: No foliage damage; moderate flower injury to 'nob hill'; minor flower injury to 'snow ridge', 'deep snow pink', 'orange bowl', and 'marguerita'
COMMENTS: Trade name, Imidan
REFERENCE: Poe, S.L., "Evaluations of Pesticides for Phytotoxicity on Chrysanthemum Flowers," Proc. Fl. State Hortic. Soc. 83:469-471 (1970).

<3262>
CHEMICAL NAME: Phosphorodithioic acid, S-[(1,3-dihydro-1,3-dioxo-2H-isoindol-2-yl)methyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Phosmet
PLANT: Apple (PYRUS MALUS); Plum (PRUNUS sp.)
EXPERIMENTAL DOSE: 1 lb/100 gal
APPLICATION METHODS: Dilute spray by hydraulic sprayer at 35 gal/min and 450-600 psi, 50% WP formulation
EXPERIMENTAL CONDITIONS: Field and laboratory tests; randomized complete block design with single tree plots; insecticide treatments replicated 3 to 4 times; sulfur, captan, or combination of both fungicides added with insecticides; multi-year experiments
EFFECTS: No phytotoxicity observed
COMMENTS: Main emphasis of study was control of plum curculio (CONOTRACHELUS NENUPHAR); trade name Imidan
REFERENCE: Forsythe, H.Y., Jr. and F.R. Hall, "Control of the Plum Curculio in Ohio," J. Econ. Entomol. 65(6):1703-1706 (1972).

<3263>
CHEMICAL NAME: Phosphorodithioic acid, S-[(1,3-dihydro-1,3-dioxo-2H-isoindol-2-yl)methyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Phosmet
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.33, 1.0, and 2.0 lb/A
APPLICATION METHODS: Spray equivalent of 15 gpa at 40 Psi; initially applied as plants began to bloom
EXPERIMENTAL CONDITIONS: Pot experiments; total of 7 applications for each of 3 groups of tests--initial treatment of 0.33 lb/A for each group followed by a second treatment of 0.33, 1.0, and 2.0 lb/A to groups 1, 2, and 3, respectively, then 5 treatments of 0.33 lb/A to each group; 6 plants per group
EFFECTS: No important differences between control and treated plants
COMMENTS: Trade name, Imidan
REFERENCE: Walker, J.K., Jr., J. Hacskaylo, and F.G. Pires, "Observations on Response of Greenhouse-Grown Cotton to Excessive Dosages of Phosphate Insecticides," J. Econ. Entomol. 57(5):782-783 (1964).

<3264>
CHEMICAL NAME: Phosphorodithioic acid, S-[(1,3-dihydro-1,3-dioxo-2H-isoindol-2-yl)methyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Phosmet
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 50% WP and 3 lb/gal technical phosmet (Imidan) EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Growth retardation and foliar injury only at 0.25% emulsion; no damage from WP formulation
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3265>
CHEMICAL NAME: Phosphorodithioic acid, S-[(1,3-dihydro-1,3-dioxo-2H-isoindol-2-yl)methyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Imidan
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight leaf damage with some stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3266>
CHEMICAL NAME: Phosphorodithioic acid, S-[(4,6-diamino-1,3,5-triazin-2-yl)methyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Menazon
PLANT: Bean, mung (PHASEOLUS AUREUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 50 to 250 ppm; 0.02% Triton-B-1956 or 2.0% DMSO
APPLICATION METHODS: Placed in petri plates on double filter paper with solutions added
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination and 120-hour seedling growth; 30 C in dark
EFFECTS: At 100 or 200 ppm, significant reduction of germination and seedling growth for both test species with varied biochemical alterations

<3266>
<3266> CONT.
COMMENTS: Suppressed germination and seedling growth as result of impaired respiration, starch, and protein degradation; inhibited development of amylase and ATPase activities during germination, effects more pronounced in wheat than in mung beans
REFERENCE: Dalvi, R.R., B. Singh, and D.K. Salunkhe, "Influence of Selected Pecticides on Germination and Associated Metabolic Changes in Wheat and Mung Bean Seeds," J. Agric. Food Chem. 20(5):1000-1003 (1972).

<3267>
CHEMICAL NAME: Phosphorodithioic acid, S-[(4,6-diamino-1,3,5-triazin-2-yl)methyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Menazon
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 0.42 kg/ha
APPLICATION METHODS: Spray application monthly
EXPERIMENTAL CONDITIONS: 2.7x6.4 m plots, randomized block design with 4 replications; Frilsham Series soil (brown earth in loamy drift over chalky head); 5-year experiment, 1969-1973; yield measurements from center of each plot; 377 kg/ha N per year as fertilizer; irrigation when soil moisture deficit reached 25 mm
EFFECTS: No injury--yields same or greater than control
COMMENTS: Menazon--insecticide
REFERENCE: Henderson, I.F. and R.O. Clements, "The Effect of Pesticides on the Yield and Botanical Composition of a Newly-Sown Ryegrass Ley and of an Old Mixed Pasture," J. Br. Grassl. Soc. 29:185-190 (1974).

<3268>
CHEMICAL NAME: Phosphorodithioic acid, S-[(4,6-diamino-1,3,5-triazin-2-yl)methyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Menazon
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 70% WP formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No injury
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3269>
CHEMICAL NAME: Phosphorodithioic acid, S-[(5-methoxy-2-oxo-1,3,4-thiadiazol-3(2H)-yl)methyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Methidathion
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.37 and 0.75 aihg
APPLICATION METHODS: 3 applications (0.75, 0.37, and 0.37 aihg), 7 days apart with hand sprayer; 2% EC formulation
EXPERIMENTAL CONDITIONS: Cultivars--'deep snow pink', 'marguerita', 'neptune', 'nob hill', 'orange bowl', 'snow ridge', 'white Anne', and 'yellow Delaware', initial application August 25; injury recorded from highest rate applied
EFFECTS: No foliage damage; moderate flower damage to 'snow ridge' and 'marguerita'; minor flower injury to 'nob hill' and 'deep snow pink'
COMMENTS: Trade name, Supracide
REFERENCE: Poe, S.L., "Evaluations of Pesticides for Phytotoxicity on Chrysanthemum Flowers," Proc. Fl. State Hortic. Soc. 83:469-471 (1970).

<3270>
CHEMICAL NAME: Phosphorodithioic acid, S-[(5-methoxy-2-oxo-1,3,4-thiadiazol-3(2H)-yl)methyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Methidathion
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Cabbage (BRASSICA OLERACEA); Eggplant (SOLANUM MELONGENA)
EXPERIMENTAL DOSE: 20 and 200 mg/seedling
APPLICATION METHODS: EC formulations applied in 4 small holes 2 in. deep around base of stem
EXPERIMENTAL CONDITIONS: Pot studies; intervals of 10 days between plantings; no direct contact with seedlings, 100 ml water given daily to each plant; observations at 10 day invervals; randomized complete design with 5 replications--5 plants per replication
EFFECTS: 200 mg/plant caused growth reduction in tomato, reduced weight of eggplant and cabbage, marginal necrosis in leaves of cabbage and tomato, and poor root and shoot development in tomato; 20 mg/plant caused no phytotoxicity
COMMENTS: Trade name Supracide
REFERENCE: Kabir, S.M.H. and M.H. Khan, "Effects of Diazinon, Dieldrin, and Supracide on Seedlings of Tomato, Eggplant, and Cabbage," J. Econ. Entomol. 65(4):1179-1180 (1972).

<3271>
CHEMICAL NAME: Phosphorodithioic acid, S-[(5-methoxy-2-oxo-1,3,4-thiadiazol-3(2H)-yl)methyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Methidathion
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: 2% EC formulation; postemergence--late-whorl stage and early-boot stage; preemergence treatment also

<3271> CONT.
EXPERIMENTAL CONDITIONS: Experiment 1--11 treatments, 2 rows by 30 ft plots, application July 30 to late-whorl stage sorghum; experiment 2--7 treatments, 2 rows by 25 ft plots, August 7 insecticide application to early-boot stage of sorghum; experiment 3--27 treatments, 2 rows by 50 ft plots, preemergence treatment, phytotoxicity measured by plant emergence; randomized complete block design with 3 replicates; test compound is insecticide
EFFECTS: Leaf burn
COMMENTS: Insecticide applied for greenbug control; trade name Supracide
REFERENCE: Depew, L.J., "Further Evaluation of Insecticides for Greenbug Control on Grain Sorghum in Kansas," J. Econ. Entomol. 65(4):1095-1098 (1972).

<3272>
CHEMICAL NAME: Phosphorodithioic acid, S-[(6-chloro-2-oxo-3(2H)-benzoxazolyl)methyl] O,O-diethyl ester
CHEMICAL COMMON NAME: Phosalone
PLANT: Apple (PYRUS MALUS); Plum (PRUNUS sp.)
EXPERIMENTAL DOSE: 0.5, 1.0, and 1.25 pints/100 gal
APPLICATION METHODS: Dilute spray by hydraulic sprayer at 35 gal/min and 450-600 psi; 3% EC formulation
EXPERIMENTAL CONDITIONS: Field and laboratory tests; randomized complete block design with single tree plots; insecticide treatments replicated 3 to 4 times; sulfur, captan, or combination of both fungicides added with insecticides; multi-year experiments
EFFECTS: Extensive rossetting of 'Golden Delicious' apples
COMMENTS: Main emphasis of study was control of plume curculio (CONOTRACHELUS NENUPHAR)
REFERENCE: Forsythe, H.Y., Jr. and F.R. Hall, "Control of the Plum Curculio in Ohio," J. Econ. Entomol. 65(6):1703-1706 (1972).

<3273>
CHEMICAL NAME: Phosphorodithioic acid, S-[[(2,5-dichlorophenyl)thio]methyl]O,O-diethyl ester
CHEMICAL COMMON NAME: Phenkaptone
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 16 fl oz/100 gal
APPLICATION METHODS: Postemergence treatments at once, twice, and five times normal dosage; emulsion formulation; normal dosage spray contained .02% active ingredient
EXPERIMENTAL CONDITIONS: Tomatoes grown in greenhouse; 3 replications
EFFECTS: Slight chlorosis and tip scorch confined to highest dosage rate
COMMENTS: Technical commercially produced grades of chemicals used
REFERENCE: Dennis, E.B. and C.A. Edwards,"Phytotoxicity of Insecticides and Acaricides," Plant Pathol. 10(2):54-60 (1961).

<3274>
CHEMICAL NAME: Phosphorodithioic acid, S-[[(4-chlorophenyl)thio]methyl] O,O-diethyl ester
CHEMICAL COMMON NAME: Carbophenothion
PLANT: Clover, sweet (MELILOTUS sp.); Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 5, 50 and 500 ppm
APPLICATION METHODS: Powder prepared from granular formulation
EXPERIMENTAL CONDITIONS: Plants grown in disposable plastic pouches in 25 ml Bryan's solution; 10 pouches for each concentration and for control; 5 seeds per pouch, grown under 1 amp with 12 hr photoperiod; after germination one ml of 1:5 (W/V) nitragin AB added as inoculom; average dry weight determined after 30 days
EFFECTS: Alfalfa--growth inhibition at all rates, about 12% at 500 ppm; sweetclover--inhibition at all rates, 33% at 500 ppm
REFERENCE: Lin, S-C., B.R. Funke, and J.T. Schulz, "Effects of Some Organophosphate and Carbamate Insecticides on Nitrification and Legume Growth," Plant Soil 37:489-496 (1972).

<3275>
CHEMICAL NAME: Phosphorodithioic acid, S-[[(4-chlorophenyl)thio]methyl] O,O-diethyl ester
CHEMICAL COMMON NAME: Carbophenothion
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.025, 0.05, and 0.10%
APPLICATION METHODS: As spray in 625 l./ha of spray material; postemergence on 42-day old crop
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: Safe at 0.025%; mild at 0.05%, 33.3% of leaves affected after 3 and 6 days; mild at 0.10%, 100% of leaves affected after 3 and 6 days
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadyan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<3276>
CHEMICAL NAME: Phosphorodithioic acid, S-[[(4-chlorophenyl)thio]methyl] O,O-diethyl ester
CHEMICAL COMMON NAME: Carbophenothion
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% WP formulation and 2 lb/gal technical carbophenothion EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment

<3276>
<3276> CONT.
EFFECTS: Growth retardation and foliar damage; WP formulation more detrimental than EC formulation
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3277>
CHEMICAL NAME: Phosphorodithioic acid, S-[[(4-chlorophenyl)thio]methyl]O,O-dimethyl ester
CHEMICAL COMMON NAME: Methyl trithion
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 4 lb/gal technical grade EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Slight chlorosis and necrosis of leaf tips at 0.25%
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3278>
CHEMICAL NAME: Phosphorodithioic acid, S-[[1,1-(dimethylethyl)thio]methyl]O,O-diethyl ester
CHEMICAL COMMON NAME: AC92100
PLANT: Spangletop, bearded, (LEPTOCHLOA FASCICULARIS)
EXPERIMENTAL DOSE: 2.8 to 22.4 kg/ha
APPLICATION METHODS: Preplant incorporated (3 to 4 cm depth) by subsurface insecticide applicator; 15% G formulation
EXPERIMENTAL CONDITIONS: Field study; rutabagas harvested after 60 days at 30-day intervals thereafter; whole, sliced, and peelings used to evaluate insecticide persistence with first instar maggots of HYLEMA BRASSICAE
EFFECTS: Undefined phytotoxic effect on rutabagas at higher application rates
COMMENTS: At high rates, phytotoxicity recorded for all compounds except trichloronat and fonofos; phytotoxicity so severe with AC64475 that all plants destroyed with rates in excess of 11.2 kg/acre
REFERENCE: Read, D.C., "Toxicity of Carbamate and Organophosphorus Insecticide Residues Absorbed by Rutabagas Grown in Treated Soil," Can. Entmol. 106(7):1319-1325 (1974).

<3279>
CHEMICAL NAME: Phosphorodithioic acid, S-[[1,1-dimethylethyl)thio]-methyl] O,O-diethyl ester
CHEMICAL COMMON NAME: Counter
PLANT: Bean, bush (PHASEOLUS HUMILIS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: Seed furrow treatment with granular formulation
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; Honeoye silt loam; June 6 planting
EFFECTS: No significant phytotoxicity
COMMENTS: Main study emphasis was seedcorn maggot control
REFERENCE: Eckenrode, C.J., N.L. Gauthier, D. Danielson, and D.R. Webb, "Seedcorn Maggot: Seed Treatments and Granule Furrow Applications for Protecting Beans and Corn," J. Econ. Entomol. 66(5):1191-1194 (1973).

<3280>
CHEMICAL NAME: Phosphorodithioic acid, S-[2-(ethylthio)ethyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Thiometon
PLANT: Tinda (CITRULLUS VULGARIS); Bottlegoard; Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.03 and 0.04 %
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Slight leaf spot development on one or two species at either concentration
COMMENTS: Safe (non-phytotoxic) insecticides on the cucurbits were DDVP, carbaryl, malathion, endosulfan, thiometon, and phosphamidon
REFERENCE: Sood, N.K., U.K. Kaushik, and V.S. Rathore, "Phytotoxicity of Modern Insecticides to Cucurbits," Indian J. Hort. 29(1):111-113 (1972)

<3281>
CHEMICAL NAME: Phosphorodithioic acid, S-[2-(ethylthio)ethyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Thiometon
PLANT: Sarson, yellow (BRASSICA CAMPESTRIS)
EXPERIMENTAL DOSE: 0.25, 0.05, 0.1, 0.3, 0.5, 0.7, and 0.8%
APPLICATION METHODS: Seed treatments
EXPERIMENTAL CONDITIONS: Seeds soaked for 4 hours; 50 seeds germinated in Petri dishes; each treatment replicated 3 times, entire experiment replicated twice; observations every 24 hours up to 96 hours; height recorded after 96 hours
EFFECTS: Germination after 96 hours--100% at 0.025%, 96% at 0.3% and 83.3% at 0.8%, height decreases as concentrations increase; stunting, yellowing, and necrosis at 0.8%
COMMENTS: Trace name, Ekatin
REFERENCE: Tripathi, R.L. and M.M. Hague, "Studies on Seed Treatment with Insecticides I: Effect of Certain Organophosphorus Insecticides on Germination and Growth of Seedlings of Mustard," Indian Oilseeds J. 7(2):144-147 (1963).

<3282>
CHEMICAL NAME: Phosphorodithioic acid, S-[2-(ethylthio)ethyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Thiometon
PLANT: Cabbage, Chinese (BRASSICA PEKINENSIS)
EXPERIMENTAL DOSE: 0.35 kg/ha
APPLICATION METHODS: Insecticidal spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; pollen collected at various times after application; evaluation time--6 hr to 21 da
EFFECTS: Significant pollen sterility for 6 hr to 14 da
COMMENTS: Most insecticides affected pollen viability only for first 4-5 days, except a few which affected it even up to 12 or 15 days
REFERENCE: Lal, O.P., "Insecticidal Sprayings Causing Pollen Sterility in Chinese Cabbage," Act. Agron. Acad. Scient. Hungar. 24:145-147 (1975).

<3283>
CHEMICAL NAME: Phosphorodithioic acid, S-[2-[(2-methoxyethyl)amino]-2-oxoethyl]O,O-dimethyl ester
CHEMICAL COMMON NAME: Amidithion
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 50% WP formulation and 2.58 lb/gal technical amidithion (Thiacron) EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Foliar injury--tipburn, chlorsis, and wrinkling
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3284>
CHEMICAL NAME: Phosphorodithioic acid, S-[2-formylmethylamino)-2-oxethyl]O,O-dimethyl ester
CHEMICAL COMMON NAME: CP-53926
PLANT: Bean, snap (PHASEOLUS VULGARIS); Bean, lima (PHASEOLUS LIMENSIS); Soybean (GLYCINE MAX); Corn (ZEA MAYS); Pea, sweet (PISUM SATIVUM); Pumpkin (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Added to seed uniformly and stored (23 C)
EXPERIMENTAL CONDITIONS: Greenhouse study; seed stored 3 mo after treatment prior to planting; soil--sandy loam; temperature--approx 27 C; evaluation time--7 and 10 da
EFFECTS: Reduced germination of lima beans but no further adverse effects noted
COMMENTS: Diazinon, CP-53926 and CP-47114 delayed and reduced germination of snap beans and lima beans; CP-53926 phytotoxic to soybeans; dimethoate and NIA-10242 did not adversely affect germination of any of crop seeds; peas, corn, and pumpkins did not appear affected by insecticide treatments
REFERENCE: Broersma, D. B. and W. H. Luckmann, "Seed Treatment Techniques and Phytotoxicity Studies on Some Grain and Vegetable Crops," J. Econ. .03):1-823 (1967).

<3285>
CHEMICAL NAME: Phosphorodithioic acid, S,S'-(phenylmethylene) O,O,O',O',-tetramethyl ester
CHEMICAL COMMON NAME: SD-7438
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 1.6 lb/gal technical SD 7438 EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No effect on growth; delayed foliar injury evident after second spraying
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3286>
CHEMICAL NAME: Phosphorodithioic acid, S,S'-methylene O,O,O',O'-tetraethyl ester
CHEMICAL COMMON NAME: Ethion
PLANT: Begonia (BEGONIA sp.); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Cineraria; Coleus (COLEUS BLUMEI); Cyclamen; Geranium; Polyanthus; St. Paulia; Violet (VIOLA sp.)
EXPERIMENTAL DOSE: 16 fl oz/100 gal
APPLICATION METHODS: Foliage sprays and root drenches at once, twice, and five times normal dose; equivalent amount of wetting agent added; normal active ingredient in spray and drench, 0.05%
EXPERIMENTAL CONDITIONS: Greenhouse and field study; treatments replicated 3 times; sprays applied til plants thoroughly drenched; root drenches applied at rate of 1/4 pint solution per 5-in. pot and 1/2 pint per 10-in. pot
EFFECTS: Begonia--0.10% spray caused leaf edge necrosis with some lamina scorch; geranium--0.25% drench caused leaf edge scorch and chlorosis; St. Paulia--0.25% spray spoiled flowers, 0.25% drench caused no damage; violet--0.25% spray caused necrotic patches on lamina and leaf edges; other plants had no damage from 5 times normal dose (0.25%)
COMMENTS: Values under effects are minimum phytotoxic dosages
REFERENCE: Dennis, E.B. and C.A. Edwards, "Phytotoxicity of Insecticides and Acaricides II. Flowers and Ornamentals," Plant Pathol. 12:27-36 (1963).

<3287>
<3287>
CHEMICAL NAME: Phosphorodithioic acid, S,S'-1,4-dioxane-2,3-diyl O,O,O',O'-tetraethyl ester
CHEMICAL COMMON NAME: Dioxathion
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 lb/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to schefflera and dieffenbachia; no injury to other species
COMMENTS: 4% EC formulation; trade name Delnav; rated unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<3288>
CHEMICAL NAME: Phosphorodithioic acid, S,S'-1,4-dioxane-2,3-diyl O,O,O',O'-tetraethyl ester
CHEMICAL COMMON NAME: Dioxathion
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 0.5 lb/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to schefflera and dieffenbachia; no injury to other species
COMMENTS: 4% EC formulation; trade name Delnav; rate unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<3289>
CHEMICAL NAME: Phosphorodithioic acid, S,S'-1,4-dioxane-2,3-diyl O,O,O',O'-tetraethyl ester
CHEMICAL COMMON NAME: Dioxathion
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% WP formulation and 4 lb/gal technical dioxathion EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Plants killed or showed minimal growth
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3290>
CHEMICAL NAME: Phosphorodithioic acid, O,O-bis(1-methylethyl) S-[2-[(phenylsulfonyl)amino[ethyl]ester
PLANT: Bluegrass, annual (POA ANNUA); Bluegrass, Kentucky (POA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Fescue, creeping red (FESTUCA RUBRA); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 20.0 lb/A
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study--emergence of seedlings (germination) studied in flat culture; evaluation time--seed planted up to 93 days after herbicide application
EFFECTS: Reduced germination of all species
COMMENTS: With few exceptions, herbicides retarded stand and vigor of turfgrasses seeded in turf killed with methyl bromide; chlordane was least and commercial arsenic complex plus 7% N most toxic to young seedlings; seedlings of Merion Kentucky bluegrass most resistent to herbicide injury; no appreciable decrease in original turf density noted except for arsenic complex material which severely injured bluegrass turf
REFERENCE: Juska, F.V. and A.A. Hanson, "Effect of Preemergence Crabgrass Herbicides on Seedling Emergence of Turfgrass Species," Weeds 12(2):97-101 (1964).

<3291>
CHEMICAL NAME: Phosphorodithioic acid, O,O-dimethyl ester, S-ester with N,N'-diethyl-2-mercaptomalonamide
CHEMICAL COMMON NAME: Bayer 47185
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 80% WP formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No growth reduction or foliage injury
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3292>
CHEMICAL NAME: Phosphorothioate, O,O-diethyl, S-ester compd. with N-(1-cyano-1-methylethyl)-2-mercaptoacetamide
CHEMICAL COMMON NAME: TH-427-1
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight to moderate leaf damage with considerable stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3293>
CHEMICAL NAME: Phosphorothioic acid, ethyl-, O-ethyl O-(2-ethyl-6-methyl-4-pyrimidinyl) ester
CHEMICAL COMMON NAME: Bayer 46676
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 50% EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Growth retardation and foliar damage at all concentrations
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3294>
CHEMICAL NAME: Phosphorothioic acid, O-(2,5-dichloro-4-iodophenyl)O,O-dimethyl ester
CHEMICAL COMMON NAME: C-9491
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Very slight leaf damage with no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3295>
CHEMICAL NAME: Phosphorothioic acid, O-(4-bromo-2,5-dichlorophenyl) O,O-dimethyl ether
CHEMICAL COMMON NAME: Bromophos
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Very slight leaf damage with some stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3296>
CHEMICAL NAME: Phosphorothioic acid, O-[2-(diethylamino)-6-methyl-4-pyrimidinyl] O,O-diethyl ester
CHEMICAL COMMON NAME: Pirimiphos-ethyl
PLANT: Bean, bush (PHASEOLUS HUMILIS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 2 oz/cwt of seed
APPLICATION METHODS: Slurry treatments--seeds placed in insecticide mixture and shaken for 3 to 10 min
EXPERIMENTAL CONDITIONS: Experiment 1--randomized complete block design, Lima silt loam, May 24 planting, 4 replications; experiment 2--same conditions except Honeoye silt loam and June 6 planting
EFFECTS: No significant phytotoxicity
COMMENTS: Main study emphasis was seedcorn maggot control
REFERENCE: Eckenrode, C.J., N.L. Gauthier, D. Danielson, and D.R. Webb, "Seedcorn Maggot: Seed Treatments and Granule Furrow Applications for Protecting Beans and Corn," J. Econ. Entomol. 66(5):1191-1194 (1973).

<3297>
<3297>
CHEMICAL NAME: Phosphorothioic acid, O-[2-(diethylamino)-6-methyl-4-pyrimidinyl]O,O-dimethyl ester
CHEMICAL COMMON NAME: PP-511
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 to 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: No leaf damage or stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3298>
CHEMICAL NAME: Phosphorothioic acid, O-[2-(dimethylamino)-6-methyl-4-pyrimidinyl] O,O-diethyl ester
CHEMICAL COMMON NAME: PP-211
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 to 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: No leaf damage or stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3299>
CHEMICAL NAME: Phosphorothioic acid, O-[2-(ethylthio)ethyl] O,O-dimethyl ester, mixt. with S-[2-(ethylthio)ethyl] O,O-dimethyl phosphorothioate
CHEMICAL COMMON NAME: Methyl demeton
PLANT: Sarson, yellow (BRASSICA CAMPESTRIS)
EXPERIMENTAL DOSE: 0.25, 0.05, 0.1, 0.3, and 0.5%
APPLICATION METHODS: Seed treatments
EXPERIMENTAL CONDITIONS: Seeds soaked for 4 hours; 50 seeds germinated in Petri dishes; each treatment replicated 3 times, entire experiment replicated twice; observations every 24 hours up to 96 hours; height recorded after 96 hours
EFFECTS: Germination after 96 hours--100% at 0.05%, 87% at 0.3%, and 22% at 0.5%; seedlings normal at 0.3%, growth completely inhibited at 0.5%
COMMENTS: Trade name, Metasystox
REFERENCE: Tripathi, R.L. and M.M. Hague, "Studies on Seed Treatment with Insecticides I: Effect of Certain Organophosphorus Insecticides on Germination and Growth of Seedlings of Mustard," Indian Oilseeds J. 7(2):144-147 (1963).

<3300>
CHEMICAL NAME: Phosphorothioic acid, O-[2-(ethylthio)ethyl] O,O-dimethyl ester, mixt. with S-[2-(ethylthio)ethyl] O,O-dimethyl phosphorothioate
CHEMICAL COMMON NAME: Meta-Systox
PLANT: Carissa (CARISSA GRANDIFLORA); Loquat (ERIOBOTRYA JAPONICA); Euonymous (EUONYMOUS JAPONICUS); Juniper (JUNIPERUS CHINENSIS); Privet (LIGUSTRUM JAPONICUM); Palm, date (PHOENIX CANARIENSIS); Pittosporum (PITTOSPORUM TOBIRO); Podocarpus (PODOCARPUS MACROPHYLLA); Azalea (RHODODENDRON INDICUM); Palm, cabbage (SABAL PALMETTO); Viburnum (VIBURNUM SUSPENSUM)
EXPERIMENTAL DOSE: 0.375 and 1.50 lb/A; EC; sticker-spreader (Plyac)
APPLICATION METHODS: Postemergence spray to run-off; 3X applications at weekly intervals
EXPERIMENTAL CONDITIONS: Greenhouse study; temperatures--80 to 85 F (day) and 62 to 68 F (night); RH--60 to 95%; evaluation time--1 wk
EFFECTS: Moderate injury to loquat at 4X (1.5 lb/A) application rate with no injury of remaining plants
COMMENTS: Almost one-half plants exhibited some phytotoxic response; most sensitive plants were schefflera, fluffy ruffle fern, peperomia, and golden pothos; most toxic chemicals were plictran and omite and least phytotoxic materials were zectran and pirimor
REFERENCE: Short, D.E. and D.B. McConnell, "Pesticide Phytotoxicity to Ornamental Plants," Proc. Fla. St. Hort. Soc. 86:439-442 (1974).

<3301>
CHEMICAL NAME: Phosphorothioic acid, O-[2-(ethylthio)ethyl] O,O-dimethyl ester, mixt. with S-[2-(ethylthio)ethyl] O,O-dimethyl phosphorothioate
CHEMICAL COMMON NAME: Meta-Systox
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1.5 and 3.0 pt/100 gal
APPLICATION METHODS: Postemergence (postflowering) spray; 50-55 psi to run-off; sprayed 2X
EXPERIMENTAL CONDITIONS: Field (29.5 C) and laboratory (19 C); intact flowers in field and cut flowers in laboratory; spray applied directly to flowers
EFFECTS: At 3.0 pt/100 gal, slight damage to flowers when dried at 19.0 or 29.5 C
COMMENTS: Some compounds not phytotoxic after two applications under any conditions (daconil, dithane M-15, dithane Z-78, morsodren, orthocide, phosdrin and thuricide); among phytotoxic chemicals and combinations,

<3301> CONT.
there was a greater tendency for injury occurring at 1) high temperature than at the low, 2) fast drying rate than the slow, 3) high temperature at fast rather than slow drying rate, and 4) high temperature at fast drying rate than low temperature at the slow rate
REFERENCE: Engelhard, A.W., "Chemical Sprays: Concentration, Drying Rate and Temperature Effects on Chrysanthemum Flower Quality", Florida State Hort. Soc. 85:370-374 (1973).

<3302>
CHEMICAL NAME: Phosphorothioic acid, O-[2-(ethylthio)ethyl] O,O-dimethyl ester, mixt. with S-[2-(ethylthio)ethyl] O,O-dimethyl phosphorothioate
CHEMICAL COMMON NAME: Methyl demeton
PLANT: Cabbage, Chinese (BRASSICA PEKINENSIS)
EXPERIMENTAL DOSE: 0.25 kg/ha
APPLICATION METHODS: Insecticidal spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; pollen collected at various times after application; evaluation time--6 hr to 21 da
EFFECTS: Significant pollen sterility for 6 hr to 14 da
COMMENTS: Most insecticides affected pollen viability only for first 4-5 days, except a few which affected it even up to 12 or 15 days
REFERENCE: Lal, O.P., "Insecticidal Sprayings Causing Pollen Sterility in Chinese Cabbage," Act. Agron. Acad. Scient. Hungar. 24:145-147 (1975).

<3303>
CHEMICAL NAME: Phosphorothioic acid, O-ethyl S,S-dipropyl ester
CHEMICAL COMMON NAME: Mocap
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: At higher rate, severe leaf damage and some stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3304>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl) ester
CHEMICAL COMMON NAME: Chlorpyrifos
PLANT: Spangletop, bearded, (LEPTOCHLOA FASCICULARIS)
EXPERIMENTAL DOSE: 2.8 to 33.6 kg/ha
APPLICATION METHODS: Preplant incorporated (3 to 4 cm depth) by subsurface insecticide applicator; 15% G formulation
EXPERIMENTAL CONDITIONS: Field study; rutabagas harvested after 60 days at 30-day intervals thereafter; whole, sliced, and peelings used to evaluate insecticide persistence with first instar maggots of HYLEMA BRASSICAE
EFFECTS: No adverse effect on rutabagas
COMMENTS: At high rates, phytotoxicity recorded for all compounds except trichloronat and fonofos; phytotoxicity so severe with AC64475 that all plants destroyed with rates in excess of 11.2 kg/acre
REFERENCE: Read, D.C., "Toxicity of Carbamate and Organophosphorus Insecticide Residues Absorbed by Rutabagas Grown in Treated Soil," Can. Entmol. 106(7):1319-1325 (1974).

<3305>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl) ester
CHEMICAL COMMON NAME: Chlorpyrifos
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.5 and 0.75 lb/A
APPLICATION METHODS: 4% EC formulation, postemergence--late-whort stage and early-boots stage; preemergence treatment also
EXPERIMENTAL CONDITIONS: Experiment 1--11 treatments, 2 rows by 30 ft plots, application July 30 to late-whorl stage sorghum; experiment 2--7 treatments, 2 rows by 25 ft plots, August 7 insecticide application to early-boot stage of sorghum; experiment 3--27 treatments, 2 rows by 50 ft plots, preemergence treatment, phytotoxicity measured by plant emergence; randomized complete block design with 3 replicates; test compound is insecticide
EFFECTS: No reported toxicity
COMMENTS: Insecticide applied for greenbug control
REFERENCE: Depew, L.J., "Further Evaluation of Insecticides for Greenbug Control on Grain Sorghum in Kansas," J. Econ. Entomol. 65(4):1095-1098 (1972).

<3306>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl) ester
CHEMICAL COMMON NAME: Dursban
PLANT: Clover, sweet (MELILOTUS sp.); Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 5, 50 and 500 ppm
APPLICATION METHODS: Powder prepared from granular formulation
EXPERIMENTAL CONDITIONS: Plants grown in disposable plastic pouches in 25 ml Bryan's solution; 10 pouches for each concentration and for control; 5 seeds per pouch, grown under 1 amp with 12 hr photoperiod; after

<3306>
<3306> CONT.
germination one ml of 1:5 (w/v) nitragin AB added as inoculom; average dry weight determined after 30 days
EFFECTS: Alfalfa--growth inhibition at all rates, about 75% at 500 ppm; sweetclover--inhibition at all rates, 68% at 500 ppm
REFERENCE: Lin, S-C., B.R. Funke, and J.T. Schulz, "Effects of Some Organophosphate and Carbamate Insecticides on Nitrification and Legume Growth," Plant Soil 37:489-496 (1972).

<3307>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl) ester
CHEMICAL COMMON NAME: Dursban 2E
PLANT: Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 1, 2, 3, 4, and 5 lb/A
APPLICATION METHODS: 3 tests--(1) 1 and 4 lb/A administered in 100 gal water; (2) spray volume of 60 gal water per acre; and (3) two spray volumes (50 and 100 gal per acre)
EXPERIMENTAL CONDITIONS: Test 1--3.5 x 4.0 ft plot size, 3 replications of each dose; test 2--3 x 10 ft plots, each treatment replicated 3 times; test 3--5 x 20 ft plots, no replications
EFFECTS: Phytotoxic symptoms noticed only at 5 lb/A treatment--slight discoloration that disappeared after first cutting
COMMENTS: Current maximum registered rate of 2 lb/A will cause no phytotoxicity problems to bentgrass golf greens
REFERENCE: Chesebro, J.W. and D.J. Porteous, "Evaluation of Dursban 2E Emulsifiable Insecticide for Phytotoxicity to Bentgrass Turf," Down Earth 28(3):1-2 (1972).

<3308>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl) ester
CHEMICAL COMMON NAME: Chlorpyrifos
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0, 16.0, and 32.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: No leaf damage with slight stand reduction at highest rates
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3309>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl) ester
CHEMICAL COMMON NAME: Chlorpyrifos
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Dracena (DRACAENA SANDERIANA); Prayer plant (MARANTA LEUCONEURA); Sword-fern (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
EXPERIMENTAL DOSE: 0.25 and 0.5 lb/100 gal
APPLICATION METHODS: Formulation--1 and 2 pints respectively; 4 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume equivalent); Plyac (spreader-sticker) added to controls and treatments at rate of 2 oz/100 gal water; sprays applied prior to 10:00 a.m.; 5 tests from May to November; temperature--83 to 98 F (day) and 56 to 78 F (night); greenhouse conditions
EFFECTS: A. SQUARROSA--moderate injury at 0.25 lb (leaf deformity), severe injury at 0.5 lb(leaf deformity, chlorotic and necrotic flecking); B. ACTINOPHYLLA--moderate injury at 0.25 lb (ring-like depression in upper leaf surface beneath residue), severe injury at 0.5 lb (same symptons as 0.25 lb); N. EXALTATA--moderate injury at 0.25 lb (leaf deformity), severe injury at 0.5 lb (leaf deformity); no injury to other plants
COMMENTS: Experimental concentrations--recomended and twice the recommended rate
REFERENCE: Hamlen, R.A. and R.W. Henley, "Phytotoxicity to Tropical Foliage Plants of Repeated Insecticide and Miticide Applications Under Fiberglass-Covered Greenhouse Conditions," Proc. Fla. State Hort. Soc. 89:336-338 (1976).

<3310>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl) ester
CHEMICAL COMMON NAME: Dursban
PLANT: Pine, Norfolk Island (ARAUCARIA EXCELSA); Copperleaf, Virginia (ACALYPHA VIRGINICA); Fern, Sprengeri asparagus (ASPARAGUS SPRENGERI); Schefflera (BRASSAIA ACTINOPHYLLA); Black olive; Palm, Madagascar (CHRYSALIDOCARPUS LUTESCENS); Sea grape (COCCOLOBA UVIFERA); Croton, gold dust (CODIAEUM VARIEGATUM); False aralia (LICYGOTHECA ELEGANTISSIMA); Dracaena, red edge (DRACAENA MARGINATA); Fig, Benjamin (FICUS BENJAMINA); Laurel, Cuban (FICUS RETUSA); Hibiscus, yellow (HIBISCUS CALYCINUS); Rose mallow (HIBISCUS ROSA-SINENSIS); Red ixora (IXORA COCCINEA); Jasmine, Wax (JASMINUM VOLUBILE); Privet (LIGUSTRUM JAPONICUM); Jessamine, Chalcas, orange (MURRAYA PANICULATA); Philodendron, self heading (PHILODENDRON SELLOUM); Pittosporum (PITTOSPORUM TOBIRO); Podocarpus (PODOCARPUS MACROPHYLLA); Viburnum (VIBURNUM SUSPENSUM); Palm, Christmas (VEITCHA MERILLI)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/100 gal (1X and 2X recommended rate), 2% EC
APPLICATION METHODS: Foliar spray; 3 applications once a week; sprayed to run-off at 40 psi
EXPERIMENTAL CONDITIONS: Field study; pot culture; slat shading; evaluation time--up to 5.5 wk
EFFECTS: Moderate damage to olive and hibiscus; slight damage to copperleaf, fig, laurel, shefflera, privet, pitto sporum, and viburnum; no damage to remaining plants
COMMENTS: Araucaria, asparagus, chrysalidocarpus, coccoloba, codiaeum, dizygotheca, dracaena, philodendron, pittosporum, podocarpus, and veitcha tolerated most or all of these materials with essentially no damage;

<3310> CONT.
acalypha, brassaia, bucida, ficus, hibiscus, ligustrum, and viburnum were sensitive to many or all of the materials; at recommended rates, diazinon and carbaryl produced the least number of phytotoxic symptoms on the least number of species
REFERENCE: Neel, P.L. and J.A. Reinert, "Phytotoxicity Evaluations of Ten Insecticides on Twenty-Three Species of Ornamental Plants Under Slat Shed Conditions," Proc. Fla. State Hortic. Soc. 88:586-590 (1976).

<3311>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: Parathion
PLANT: Tinda (CITRULLUS VULGARIS); Bottlegoard; Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.03 and 0.04 %
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Leaf spots within 3 or 7 days at both concentrations
COMMENTS: Safe (non-phytotoxic) insecticides on the cucurbits were DDVP, carbaryl, malathion, endosulfan, thiometon, and phosphamidon
REFERENCE: Sood, N.K., U.K. Kaushik, and V.S. Rathore, "Phytotoxicity of Modern Insecticides to Cucurbits," Indian J. Hort. 29(1):111-113 (1972)

<3312>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: Ethyl parathion
PLANT: Sarson, yellow (BRASSICA CAMPESTRIS)
EXPERIMENTAL DOSE: 0.25, 0.05, 0.1, 0.3, and 0.5%
APPLICATION METHODS: Seed treatments
EXPERIMENTAL CONDITIONS: Seeds soaked for 4 hours; 50 seeds germinated in Petri dishes; each treatment replicated 3 times, entire experiment replicated twice; observations every 24 hours up to 96 hours; height recorded after 96 hours
EFFECTS: Germination after 96 hours--97.3% at 0.025%, 92% at 0.1%, and 57% at 0.5%; stunting and yellowing above 0.025%, growth completely inhibited at 0.5%
REFERENCE: Tripathi, R.L. and M.M. Haque, "Studies on Seed Treatment with Insecticides I: Effect of Certain Organophosphorus Insecticides on Germination and Growth of Seedlings of Mustard," Indian Oilseeds J. 7(2):144-147 (1963).

<3313>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: Ethyl parathion
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.33, 1.0, and 2.0 lb/A
APPLICATION METHODS: Spray equivalent of 15 gpa at 40 Psi; initially applied as plants began to bloom
EXPERIMENTAL CONDITIONS: Pot experiments; total of 7 applications for each of 3 groups of tests--initial treatment of 0.33 lb/A for each group followed by a second treatment of 0.33, 1.0, and 2.0 lb/A to groups 1, 2, and 3, respectively, then 5 treatments of 0.33 lb/A to each group; 6 plants per group
EFFECTS: No important differences between control and treated plants
REFERENCE: Walker, J.K., Jr., J. Hacskaylo, and E.G. Pires, "Observations on Response of Greenhouse-Grown Cotton to Excessive Dosages of Phosphate Insecticides," J. Econ. Entomol. 57(5):782-783 (1964).

<3314>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: Parathion
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 22.7 g/ha
APPLICATION METHODS: Bait application applied monthly
EXPERIMENTAL CONDITIONS: 2.7x6.4 m plots, randomized block design with 4 replications; Frilsham Series soil (brown earth in loamy drift over chalky head); 5-year experiment, 1969-1973; yield measurements from center of each plot; 377 kg/ha N per year as fertilizer; irrigation when soil moisture deficit reached 25 mm
EFFECTS: No injury--yields same or greater than control
COMMENTS: Parathion--insecticide
REFERENCE: Henderson, I.F. and R.O. Clements, "The Effect of Pesticides on the Yield and Botanical Composition of a Newly-Sown Ryegrass Ley and of an Old Mixed Pasture," J. Br. Grassl. Soc. 29:185-190 (1974).

<3315>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: Parathion
PLANT: Cabbage, Chinese (BRASSICA PEKINENSIS)
EXPERIMENTAL DOSE: 0.25 kg/ha
APPLICATION METHODS: Insecticidal spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; pollen collected at various times after application; evaluation time--6 hr to 21 da
EFFECTS: Significant pollen sterility for 6 hr to 14 da
COMMENTS: Most insecticides affected pollen viability only for first 4-5 days, except a few which affected it even up to 12 or 15 days
REFERENCE: Lal, O.P., "Insecticidal Sprayings Causing Pollen Sterility in Chinese Cabbage," Act. Agron. Acad. Scient. Hungar. 24:145-147 (1975).

<3316>
<3316>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: Parathion
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.01, 0.02, and 0.04%
APPLICATION METHODS: As spray in 625 l./ha of spray material; postemergence on 42-day old crop
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: Safe at 0.01 and 0.02%; mild at 0.04%, 43% of leaves affected after 3 and 6 days
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadyan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<3317>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: Parathion
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 2.4x10(-5) M
APPLICATION METHODS: Added to fresh tissue homogenate prepared from plants at 5-leaf stage
EXPERIMENTAL CONDITIONS: Laboratory study; enzyme study
EFFECTS: Inhibition of propanil-hydrolyzing enzyme
COMMENTS: Hydrolysis of rice plants inhibited by insecticides; inhibitory activity of organophosphate such as paraoxon IN VIVO and IN VITRO significantly stronger than that of organothiophosphate such as parathion; injury to rice plants by insecticides sprayed on them with propanil seems to be caused by inhibition of propanil detoxifying enzyme
REFERENCE: Matsunaka, S., "Propanil Hydrolysis: Inhibition in Rice Plants by Insecticides," Sci. 160:1360-1361 (1968).

<3318>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: Parathion
PLANT: Tomato (LYCOPERSICON PIMPINELLIFOLIUM); Tomato (LYCOPERSICON PERUVIANUM); Tomato (LYCOPERSICON HIRSUTUM); Tomato (LYCOPERSICON ESCULENTUM); Petunia (PETUNIA sp.)
EXPERIMENTAL DOSE: 1000 ppm; EC
APPLICATION METHODS: Added (spray) to agar medium disk to run-off
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--15 hr; pollen germinated and length of germination tube measured
EFFECTS: Reduced germination and pollen tube growth
COMMENTS: Germination of petunia and tomato pollen completely inhibited by topical applications of naled; reduction in germination and tube elongation of pollen caused by parathion, azinphosmethyl, dicofol, endosulfan, dichlorvos, DDT, and gardona
REFERENCE: Gentile, A.G., K.J. Gallagher, and Z. Santner, "Effect of Some Formulated Insecticides on Pollen Germination in Tomato and Petunia," J. Econ. Ent. 64(4):916-919 (1971).

<3319>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[2-(ethylthio)ethyl]ester, mixt. with O,O-diethyl S-[2-(ethylthio)ethyl] phosphorothioate
CHEMICAL COMMON NAME: Dimeton
PLANT: Cotton (GOSSYPIUM BARBADENSE)
EXPERIMENTAL DOSE: 1.0 and 1.6 lb/A; 1 lb/bushel of seed
APPLICATION METHODS: Seed treatments
EXPERIMENTAL CONDITIONS: Field studies, 3 years; mechanically-delinted seed planted at rate of 32 lb/A, acid-delinted seed planted at rate of 25 lb/A; randomized block design experimental arrangement; insect present, thrips (FRANKLINIELLA FUSCA and F. TRITICI)
EFFECTS: No phytotoxic effect at 1 lb/bushel rate; lb/A treatments showed some inhibition of early growth and delayed fruiting, no significant yield reduction at any treatment
REFERENCE: Hanna, R.L., "Insecticidal Seed Treatments for Cotton," J. Econ. Entomol. 51(2):160-163 (1958).

<3320>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[2-(ethylthio)ethyl]ester, mixt. with O,O-diethyl S-[2-(ethylthio)ethyl] phosphorothioate
CHEMICAL COMMON NAME: Demeton
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Postemergence spray for insect control; 10 gal/A; 3X applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted
COMMENTS: Spray injury generally more severe with accumulative applications; most severe with oil soluble formulation of DDT for all dates and accumulative applications, and for dilan and BHC with single applications
REFERENCE: Probst, A. H. and R. T. Everly, "Effect of Foliage Insecticides on Growth, Yield and Chemical Composition of Soybeans," Agron. J. 49:577-581 (1957).

<3321>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[4-(methylsulfinyl)phenyl] ester
CHEMICAL COMMON NAME: Fensulfothion
PLANT: Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Broadcast at time of seeding; incorporated by "bow-wave" method; G Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and silt loam; time period--1972 and 1973; locations in England and Canada; trifluralin and propachlor combined treatment for effective weed control
EFFECTS: No adverse effect on cauliflower stand or yield
COMMENTS: Two combinations of herbicides, trifluralin incorporated pre-drilling plus propachlor pre-emergence, and nitrofen plus propachlor applied pre-emergence, gave good weed control; relative effectiveness depended on species composition of weed population; insecticides isophenphos, carbofuran, chlorfenvinphos and fensulfothion applied as bow-wave treatments; none whether in combination with herbicides or not, adversely affected crop stand or yield; yield reduced when either weeds or root-fly maggots not controlled
REFERENCE: Finlayson, D.G. and C.J. Campbell, "Herbicides and Insecticides: Their Compatibility and Effects on Weeds, Insects and Earthworms in the Minicauliflower Crop," Ann. Appl. Biol. 79(1):95-108 (1975).

<3322>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[4-(methylsulfinyl)phenyl] ester
CHEMICAL COMMON NAME: Fensulfothion
PLANT: Spangletop, bearded, (LEPTOCHLOA FASCICULARIS)
EXPERIMENTAL DOSE: 2.8 to 33.6 kg/ha
APPLICATION METHODS: Preplant incorporated (3 to 4 cm depth) by subsurface insecticide applicator; 15% G formulation
EXPERIMENTAL CONDITIONS: Field study; rutabagas harvested after 60 days at 30-day intervals thereafter; whole, sliced, and peelings used to evaluate insecticide persistence with first instar maggots of HYLEMA BRASSICAE
EFFECTS: Undefined phytotoxic effect on rutabagas at higher application rates
COMMENTS: At high rates, phytotoxicity recorded for all compounds except trichloronat and fonofos; phytotoxicity so severe with AC64475 that all plants destroyed with rates in excess of 11.2 kg/acre
REFERENCE: Read, D.C., "Toxicity of Carbamate and Organophosphorus Insecticide Residues Absorbed by Rutabagas Grown in Treated Soil," Can. Entmol. 106(7):1319-1325 (1974).

<3323>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[4-(methylsulfinyl)phenyl] ester
CHEMICAL COMMON NAME: Fensulfothion
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1, 2, and 4 lb/A
APPLICATION METHODS: In 7-in. bands over row and in drill hole with seed
EXPERIMENTAL CONDITIONS: Plano silt loam; plots--single 40-in. rows 40 ft long, randomized block design and 3 or 4 replicates; field studies; yields determined as indication of growth
EFFECTS: No influence on corn yield from 7-in. band application; drill hole application, slight yield reduction
REFERENCE: Apple, J.W., "Response of Corn to Granular Insecticides Applied to the Row at Planting," J. Econ. Entomol. 64(5):1208-1211 (1971).

<3324>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[4-methylsulfinyl)phenyl] ester
CHEMICAL COMMON NAME: Dasanit
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0, 12.0, and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight leaf damage with considerable stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3325>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] ester
CHEMICAL COMMON NAME: Diazinon
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5, 1.0 and 2.0 oz/bushel
APPLICATION METHODS: Seed treatment; WP formulations of all doses, EC formulation of 1.0 oz/bushel dose
EXPERIMENTAL CONDITIONS: Field study; 20-ft rows with 100 seeds/row; 4 replications, randomized complete block design; highly viable seeds
EFFECTS: No appreciable injury except at 2-oz rate where germination injury was recorded as slight
REFERENCE: Starks, K.J. and J.H. Lilly, "Insecticide Seed Treatment of Soybeans in Relation to Phytotoxicity and Seed-Corn Maggot Control," J. Econ. Entomol. 48(5):538-543 (1955).

<3326>
<3326>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] ester
CHEMICAL COMMON NAME: Diazinon
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Cabbage (BRASSICA OLERACEA); Eggplant (SOLANUM MELONGENA)
EXPERIMENTAL DOSE: 20 and 200 mg/seedling
APPLICATION METHODS: EC formulations applied in 4 small holes 2 in. deep around base of stem
EXPERIMENTAL CONDITIONS: Pot studies; intervals of 10 days between plantings; no direct contact with seedlings, 100 ml water given daily to each plant; observations at 10 day invervals; randomized complete design with 5 replications--5 plants per replication
EFFECTS: 200 mg/plant stimulated eggplant and cabbage growth; 20 mg/plant increased cabbage weight significantly; 200 mg/plant caused tomato plant weight reduction; 20 mg caused no phytotoxicity
REFERENCE: Kabir, S.M.H. and M.H. Khan, "Effects of Diazinon, Dieldrin, and Supracide on Seedlings of Tomato, Eggplant, and Cabbage," J. Econ. Entomol. 65(4):1179-1180 (1972).

<3327>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] ester
CHEMICAL COMMON NAME: Diazinon
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1, 2, 4, and 8 lb/A
APPLICATION METHODS: In 7-in. bands over row and in drill hole with seed
EXPERIMENTAL CONDITIONS: Plano silt loam; plots--single 40-in. rows 40 ft long, randomized block design and 3 or 4 replicates; field studies; yields determined as indication of growth
EFFECTS: No influence on corn yield from 7-in. band application; relatively safe when placed in drill hole
COMMENTS: One test showed yield loss of 2 and 4 lb/A, but extensive testing indicates safety for corn even from drill hole placement
REFERENCE: Apple, J.W., "Response of Corn to Granular Insecticides Applied to the Row at Planting," J. Econ. Entomol. 64(5):1208-1211 (1971).

<3328>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] ester
CHEMICAL COMMON NAME: Diazinon
PLANT: Bean, bush (PHASEOLUS LIMENSIS); Bean, Lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 0.8, 1.7, and 2 oz/cwt of seed and 0.5 lb/A
APPLICATION METHODS: Slurry treatments- seeds placed in insecticide mixture and shaken 3 to 10 min (2 oz/cwt); granular seed furrow treatments--0.5 lb/A; planterbox treatments--0.8 and 1.7 oz/cwt
EXPERIMENTAL CONDITIONS: Experiment 1--randomized complete block design with 4 replicates, May 24 planting, Lima silt loam; experiment 2--same conditions except Honeoye silt loam and June 6 planting; experiment 4--planterbox formulations
EFFECTS: No significant phytotoxicity
COMMENTS: Main study emphasis was seedcorn maggot control
REFERENCE: Eckenrode, C.J., N.L. Gauthier, D. Danielson, and D.R. Webb, "Seedcorn Maggot: Seed Treatments and Granule Furrow Applications for Protecting Beans and Corn," J. Econ. Entomol. 66(5):1191-1194 (1973).

<3329>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] ester
CHEMICAL COMMON NAME: Diazinon
PLANT: Bean, snap (PHASEOLUS VULGARIS); Bean, lima (PHASEOLUS LIMENSIS); Soybean (GLYCINE MAX); Corn (ZEA MAYS); Pea, sweet (PISUM SATIVUM); Pumpkin (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 2.0 and 4.0 oz/100 lb seed; 50% WP and Tech
APPLICATION METHODS: Added to seed uniformly and stored (23 C)
EXPERIMENTAL CONDITIONS: Greenhouse study; seed stored 3 mo after treatment prior to planting; soil--sandy loam; temperature--approx 27 C; evaluation time--7 and 10 da
EFFECTS: No adverse effect on seedling growth; reduced germination of lima bean only at 4.0 lb/A (Tech)
COMMENTS: Diazinon, CP-53926 and CP-47114 delayed and reduced germination of snap beans and lima beans; CP-53926 phytotoxic to soybeans; dimethoate and NIA-10242 did not adversely affect germination of any of crop seeds; peas, corn, and pumpkins did not appear affected by insecticide treatments
REFERENCE: Broersma, D. B. and W. H. Luckmann, "Seed Treatment Techniques and Phytotoxicity Studies on Some Grain and Vegetable Crops," J. Econ. .03):1-823 (1967).

<3330>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] ester
CHEMICAL COMMON NAME: Diazinon
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.025, 0.05, and 0.10%
APPLICATION METHODS: As spray in 625 l./ha of spray material; postemergence on 42-day old crop
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: Safe at 0.025%; mild at 0.05%, 33.3% of leaves affected after day 3 but effects absent by day 6; mild at 0.10%, 40% of leaves affected after day 3 but effects absent at day 6
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadyan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<3331>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] ester
CHEMICAL COMMON NAME: Diazinon
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% WP and 2 and 4 lb/gal technical diazinon formulations
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Growth reduction and foliar damage
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3332>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] ester
CHEMICAL COMMON NAME: Diazinon
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Moderate leaf damage with no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 2 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3333>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] ester
CHEMICAL COMMON NAME: Diazinon
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Dracena (DRACAENA SANDERIANA); Prayer plant (MARANTA LEUCONEURA); Sword-fern (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal
APPLICATION METHODS: Amount formulated--1 and 2 pints respectively; 4 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume equivalent); Plyac (spreader-sticker) added to controls and treatments at rate of 2 oz/100 gal water; sprays applied prior to 10:00 a.m.; 5 tests from May to November; temperature--83 to 98 F (day) and 56 to 78 F (night); greenhouse conditions
EFFECTS: A. SQUARROSA--no injury at low rate, moderate injury at high rate (general chlorosis of foliage); B. ACTINOPHYLLA--no injury at 0.5 lb, slight injury at 1.0 lb (general chlorosis of foliage); no injury to other plants
COMMENTS: Experimental concentrations--recomended and twice the recommended rate
REFERENCE: Hamlen, R.A. and R.W. Henley, "Phytotoxicity to Tropical Foliage Plants of Repeated Insecticide and Miticide Applications Under Fiberglass-Covered Greenhouse Conditions," Proc. Fla. State Hort. Soc. 89:336-338 (1976).

<3334>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] ester
CHEMICAL COMMON NAME: Diazinon
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 5.0 to 13.0 mg/pot; WP
APPLICATION METHODS: Added to soil surface
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--27 to 37 C; evaluation time--2 to 17 wk; soil from paddy rice field
EFFECTS: Reduced growth and enzyme inhibition
COMMENTS: Activity of propanil-hydrolyzing enzyme in rice indicated slow increase in rate of hydrolysis during early stages of growth, followed by sharp increase for extracts of 7-week-old samples; rate of hydrolysis reached maximum at harvest time (approximately 17 weeks); enzyme activity of barnyard grass not detected at different growth stages
REFERENCE: El-Refai, A. and M.M. Mowafy, "Propanil Hydrolysis: Inhibition in Rice Plants by Diazinon and Carbaryl Translocated From the Soil," J. Assoc. Off. Analy. Chem. 56(4):1178-1182 (1973).

<3335>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] ester
CHEMICAL COMMON NAME: Diazinon
PLANT: Pine, Norfolk Island (ARAUCARIA EXCELSA); Copperleaf, Virginia (ACALYPHA VIRGINICA); Fern, Sprengeri asparagus (ASPARAGUS SPRENGERI); Schefflera (BRASSAIA ACTINOPHYLLA); Black olive; Palm, Madagascar (CHRYSALIDOCARPUS LUTESCENS); Sea grape (COCCOLOBA UVIFERA); Croton, gold dust (CODIAEUM VARIEGATUM); False aralia (LICYGOTHECA ELEGANTISSIMA); Dracaena, red edge (DRACAENA MARGINATA); Fig, Benjamin (FICUS BENJAMINA); Laurel, Cuban (FICUS RETUSA); Hibiscus, yellow (HIBISCUS CALYCINUS); Rose mallow (HIBISCUS ROSA-SINENSIS); Red ixora (IXORA COCCINEA); Jasmine, Wax (JASMINUM VOLUBILE); Privet (LIGUSTRUM JAPONICUM); Jessamine, Chalcas, orange (MURRAYA PANICULATA); Philodendron, self heading (PHILODENDRON SELLOUM); Pittosporum (PITTOSPORUM TOBIRO); Podocarpus (PODOCARPUS MACROPHYLLA); Viburnum (VIBURNUM SUSPENSUM); Palm, Christmas (VEITCHA MERILLI)

<3335>
<3335> CONT.
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal (1X and 2X recommended rate); 4% EC
APPLICATION METHODS: Foliar spray; 3 applications once a week; sprayed to run-off at 40 psi
EXPERIMENTAL CONDITIONS: Field study; pot culture; slat shading; evaluation time--up to 5.5 wk
EFFECTS: Moderate damage of olive and hibiscus; slight damage of schefflera, laurel, and podocarpus; no damage to remaining plants
COMMENTS: Araucaria, asparagus, chrysalidocarpus, coccoloba, codiaeum, dizygotheca, dracaena, philodendron, pittosporum, podocarpus, and veitcha tolerated most or all of these materials with essentially no damage; acalypha, brassaia, bucida, ficus, hibiscus, ligustrum, and viburnum were sensitive to many or all of the materials; at recommended rates, diazinon and carbaryl produced the least number of phytotoxic symptoms on the least number of species
REFERENCE: Neel, P.L. and J.A. Reinert, "Phytotoxicity Evaluations of Ten Insecticides on Twenty-Three Species of Ornamental Plants Under Slat Shed Conditions," Proc. Fla. State Hortic. Soc. 88:586-590 (1976).

<3336>
CHEMICAL NAME: Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
CHEMICAL COMMON NAME: Thionazin
PLANT: Hydrangea (HYDRANGEA MACROPHYLLA)
EXPERIMENTAL DOSE: 0.01, 0.02, 0.03, 0.05, and 0.06% solution; 1 and 2% G per bushel of compost
APPLICATION METHODS: Soil drenches; 10% granules
EXPERIMENTAL CONDITIONS: Plants innoculated with eel worm suspensions, soil drenches applied to control eelworms; 10% granular application in peat-sand composts at 1 and 2 oz per bushel; glasshouse experiments
EFFECTS: 0.02%--February application caused phytotoxicity; 0.03%--no live eelworms 4 wk after treatment but some phytotoxicity observed, plants did recover; 0.06%--complete eelworm control but plants suffered severe phytotoxicity; general symptoms--stunting of shoots, downward curling of leaves, scorching of leaves, and deformed and colourless flowers; 10% granules caused severe phytotoxicity to rooted cuttings
COMMENTS: Phytotoxicity risk greater during February and March to forced plants; thionazin drenches applied to unforced plants at other times showed no phytotoxicity and controlled eelworms
REFERENCE: French, N., M.E. John, and J.J.W. Williams, "Observations on the Biology and Control of Stem Eelworm (DITYLENCHUS DIPSACI (Kuhn) Filipjev) on Hydrangea (HYDRANGEA MACROPHYLLA Ser.)," Plant Pathol. 20(4):177-183 (1971).

<3337>
CHEMICAL NAME: Phosphorothioic acid, O,O-dimethyl O-(3-methyl-4-nitrophenyl) ester
CHEMICAL COMMON NAME: CP-47114
PLANT: Bean, snap (PHASEOLUS VULGARIS); Bean, lima (PHASEOLUS LIMENSIS); Soybean (GLYCINE MAX); Corn (ZEA MAYS); Pea, sweet (PISUM SATIVUM); Pumpkin (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Added to seed uniformly and stored (23 C)
EXPERIMENTAL CONDITIONS: Greenhouse study; seed stored 3 mo after treatment prior to planting; soil--sandy loam; temperature--approx 27 C; evaluation time--7 and 10 da
EFFECTS: At 4.0 lb/a, reduced germination and seedling growth of snap bean and lima bean with no adverse effect on remaining crops
COMMENTS: Diazinon, CP-53926 and CP-47114 delayed and reduced germination of snap beans and lima beans; CP-53926 phytotoxic to soybeans; dimethoate and NIA-10242 did not adversely affect germination of any of crop seeds; peas, corn, and pumpkins did not appear affected by insecticide treatments
REFERENCE: Broersma, D. B. and W. H. Luckmann, "Seed Treatment Techniques and Phytotoxicity Studies on Some Grain and Vegetable Crops," J. Econ. .03):1-823 (1967).

<3338>
CHEMICAL NAME: Phosphorothioic acid, O,O-dimethyl O-(3-methyl-4-nitrophenyl) ester
CHEMICAL COMMON NAME: Fenitrothion
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.025, 0.05, and 0.10%
APPLICATION METHODS: As spray in 625 l./ha of spray material; postemergence on 42-day old crop
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: Mild at all rates; 40, 17, and 33.3% of leaves affected after days 3 and 6 at 0.025, 0.05, and 0.10% respectively
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadyan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<3339>
CHEMICAL NAME: Phosphorothioic acid, O,O-dimethyl O-(3-methyl-4-nitrophenyl) ester
CHEMICAL COMMON NAME: Fenitrothion
PLANT: Pine, white (PINUS STROBUS)
EXPERIMENTAL DOSE: 10 and 1000 ppm
APPLICATION METHODS: Seed treatment
EXPERIMENTAL CONDITIONS: Seeds chilled (stratified) for 21 days; seeds exposed to fenitrothion emulsion during 21 days or during initial 3 days of germination; seedlings placed in potting soil in growth chamber at 20 C following germination; water and oxygen uptake monitored, histochemical studies performed and metabolic parameters monitored
EFFECTS: Increase in water uptake and basic proteins (histones) observed only at 1000 ppm; some decreased enzymatic activity observed in hypocotyl region at both concentrations; after 5 months, no noticeable

<3339> CONT.
morphogentic or developmental growth defects
COMMENTS: Fenitrothion--spruce budworm insecticide; 10 ppm approximates field concentration
REFERENCE: Pomber, L. and P. Weinberger, "Some Physiological and Phytotoxic Effects of Fenitrothion on Germination and Seedling Growth of PINUS STROBUS L.," Chem. Control Res. Inst., Ottawa, Inf. Rep. CC-X-80:1-25 (1974).

<3340>
CHEMICAL NAME: Phosphorothioic acid, O,O-dimethyl O-(3-methyl-4-nitrophenyl) ester
CHEMICAL COMMON NAME: Fenitrothion
PLANT: Birch, yellow (BETULA ALLEGHANIENSIS)
EXPERIMENTAL DOSE: 10 ppm (4 oz/A) and 1000 ppm (400 oz/A)
APPLICATION METHODS: Seed treatment
EXPERIMENTAL CONDITIONS: Petri dish germination in growth chambers; seeds exposed only during course of stratification (chilling) period; 300 seeds, 30 replicates of 10 seeds each; seeds examined following 0, 12, 26, 40, and 54 days stratification; germinated seeds grown for 1 week then vigor determined; subsequently, seedlings placed in soil in growth chamber at 20 C
EFFECTS: 1000 ppm greatly decreased germination rates and dwarfed young seedlings; 10 ppm differed little from control
COMMENTS: Fenitrothion--insecticide for spruce budworm; normal spraying (4 oz/A) does not seem to alter growth
REFERENCE: Pomber, L. and P. Weinberger, "The Phytotoxicity of Fenitrothion as Assessed by the Germination and Early Growth of BETULA ALLEGHANIENSIS Britt.," Chem. Control Res. Inst., Ottawa, Inf. Rep. CC-X-79:1-20 (1974).

<3341>
CHEMICAL NAME: Phosphorothioic acid, O,O-dimethyl O-(3-methyl-4-nitrophenyl) ester
CHEMICAL COMMON NAME: Fenthion
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0, 12.0, and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: No leaf damage or reduction in stand
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3342>
CHEMICAL NAME: Phosphorothioic acid, O,O-dimethyl O-(3,5,6-trichloro-2-pyridinyl] ester
CHEMICAL COMMON NAME: Dowco 214
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 to 24.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: No leaf damage but considerable stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3343>
CHEMICAL NAME: Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: Methyl parathion
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence spray; 4 gal/tree at 350 psi; repeat (3) applications; 5% EC Formulation
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: No adverse effect on peach fruit set
COMMENTS: Fruit counts with methyl parathion and azinphosmethyl significantly lower than control; carbaryl and monocrotophos treatments also less, but differences not statistically significant; no obvious differences in fruit size at maturity in various treatments, although fruit from trees sprayed with methyl parathion seemed 1-2 days slower in maturing
REFERENCE: Rice, R.E. and R.A. Jones, "Reduction of Fruit Set by Repeated Applications of Selected Insecticides to Peaches," Environ. Entom. 1(5):677-678 (1972).

<3344>
<3344>
CHEMICAL NAME: Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: Methyl Parathion
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.25 oz/bushel
APPLICATION METHODS: Seed treatment; WP formulations
EXPERIMENTAL CONDITIONS: Field study; slurry treatments of seed; plot--19-ft row with 100 seeds; 8 replications; 19-month old seeds
EFFECTS: Significant decrease in mean number of plants emerged; significant increase in number of mean emergence days
COMMENTS: Trade name, Metacide
REFERENCE: Starks, K.J. and J.H. Lilly, "Insecticide Seed Treatment of Soybeans in Relation to Phytotoxicity and Seed-Corn Maggot Control," J. Econ. Entomol. 48(5):538-543 (1955).

<3345>
CHEMICAL NAME: Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: Methyl Parathion
PLANT: Sarson, yellow (BRASSICA CAMPESTRIS)
EXPERIMENTAL DOSE: 0.25, 0.05, 0.1, 0.3, and 0.5%
APPLICATION METHODS: Seed treatments
EXPERIMENTAL CONDITIONS: Seeds soaked for 4 hours; 50 seeds germinated in Petri dishes; each treatment replicated 3 times, entire experiment replicated twice; observations every 24 hours up to 96 hours; height recorded after 96 hours
EFFECTS: Stunting at all rates; stunting and yellowing at 0.05 and 0.1%; growth completely inhibited at 0.3%
REFERENCE: Tripathi, P.L. and M.M. Hague, "Studies on Seed Treatment with Insecticides I: Effect of Certain Organophosphorus Insecticides on Germination and Growth of Seedlings of Mustard," Indian Oilseeds J. 7(2):144-147 (1963).

<3346>
CHEMICAL NAME: Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: Methyl parathion
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: 4% EC formulation, postemergence--late-whort stage and early-boots stage; preemergence treatment also
EXPERIMENTAL CONDITIONS: Experiment 1--11 treatments, 2 rows by 30 ft plots, application July 30 to late-whorl stage sorghum; experiment 2--7 treatments, 2 rows by 25 ft plots, August 7 insecticide application to early-boot stage of sorghum; experiment 3--27 treatments, 2 rows by 50 ft plots, preemergence treatment, phytotoxicity measured by plant emergence; randomized complete block design with 3 replicates; test compound is insecticide
EFFECTS: Leaf burn
COMMENTS: Insecticide applied for greenbug control
REFERENCE: Depew, L.J., "Further Evaluation of Insecticides for Greenbug Control on Grain Sorghum in Kansas," J. Econ. Entomol. 65(4):1095-1098 (1972).

<3347>
CHEMICAL NAME: Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester
CHEMICAL COMMON NAME: Methyl parathion
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.33, 1.0, and 2.0 lb/A
APPLICATION METHODS: Spray equivalent of 15 gpa at 40 Psi; initially applied as plants began to bloom
EXPERIMENTAL CONDITIONS: Pot experiments; total of 7 applications for each of 3 groups of tests--initial treatment of 0.33 lb/A for each group followed by a second treatment of 0.33, 1.0, and 2.0 lb/A to groups 1, 2, and 3, respectively, then 5 treatments of 0.33 lb/A to each group; 6 plants per group
EFFECTS: No important differences between control and treated plants
REFERENCE: Walker, J.K., Jr., J. Hacskaylo, and E.G. Pires, "Observations on Response of Greenhouse-Grown Cotton to Excessive Dosages of Phosphate Insecticides," J. Econ. Entomol. 57(5):782-783 (1964).

<3348>
CHEMICAL NAME: Phosphorothioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CHEMICAL COMMON NAME: Bay 45432
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0, 16.0, and 32.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Plant kill at highest rate with lesser effects at both lower rates
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3349>
CHEMICAL NAME: Phosphorothioic acid, O,O'-(thiodi-4,1-phenylene) O,O,O',O'-tetramethyl ester
CHEMICAL COMMON NAME: Abate
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.5 kg/1.038 A
APPLICATION METHODS: Formulation--25% WP
EXPERIMENTAL CONDITIONS: Field experiments; applied in 6 randomized plots; 2 applications--at 2 and 4 week growth stages
EFFECTS: Phytotoxicity noted but undefined
COMMENTS: Insecticide study; other insecticides studied but no information on phytotoxicity; abate was most effective but not recommended because of phytotoxicity
REFERENCE: Abul-Nasr, S., S.I., El-Sherif, A.L. Isa, and A.S. Aly, "Efficiency of Certain Insecticides for the Control of the Maize Leaf-Miner PSEUDONPOMYZA SPICATA Mall," Agri. Res. Rev. 53(1):81-85 (1975).

<3350>
CHEMICAL NAME: Phosphorothioic acid, O,O'-(thiodi-4,1-phenylene) O,O,O',O'-tetramethyl ester
CHEMICAL COMMON NAME: Abate
PLANT: Azalea (RHODENDRON OBTUSUM)
EXPERIMENTAL DOSE: 4000 ppm
APPLICATION METHODS: Potted, intact plant dipped
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Leaves of three azalea varieties were lost but the plants recovered completely
COMMENTS: Abate the only 100% effective insecticide of number evaluated; abate not phytotoxic to 90 unspecified plant species
REFERENCE: Harlan, D.P., "Whitefringed Beetles: Control of Larvae in Nursery Containers and Phytotoxicity of Abate," J. Econ. Entom. 67(6):804 (1974).

<3351>
CHEMICAL NAME: Phosphorothioic acid, O,O'-(thiodi-4,1-phenylene) O,O,O',O'-tetramethyl ester
CHEMICAL COMMON NAME: Abate
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 16.0 oz/100 lb of seed; EC
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Very slight leaf damage and no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<3352>
CHEMICAL NAME: Phosphorothioic acid, S-[[(4-chlorophenyl)thio]methyl] O,O-diethyl ester
CHEMICAL COMMON NAME: Trithion
PLANT: Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 25, 50, 75 and 100 ppm; xylene emulsion (100 ppm)
APPLICATION METHODS: Solution addition to filter paper in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--75 F; evaluation time--48 hr; germinated seed selected and exposed
EFFECTS: No consistent adverse effect on sugarbeet
COMMENTS: Phytotoxic effect of insecticide fertilizer mixtures attributed to fertilizer which interferred with uptake of water required by seed for germination, or to insecticide or solvent which may cause seedling damage; phorate and diazinon were more phytotoxic than Trithion or heptachlor in field and laboratory tests; insecticide solvent Velsicol AR-60 was more phytotoxic than xylene--depressed seedling emergence significantly in the field
REFERENCE: Allen, W.R., W.L. Askew, and K. Schreiber, "Effect of Insecticide Fertilizer Mixtures and Seed Treatments on Emergence of Sugar Beet Seedlings," J. Econ. Ent. 54(1):181-187 (1961).

<3353>
CHEMICAL NAME: Phosphorothioic acid, S-[[(4-chlorophenyl)thio]methyl] O,O-diethyl ester
CHEMICAL COMMON NAME: Trithion
PLANT: Apple (PYRUS MALUS)
EXPERIMENTAL DOSE: 8.0 lb/A; 25% WP
APPLICATION METHODS: Foliar spray; 75 gal/A
EXPERIMENTAL CONDITIONS: Field study; insecticide application in orchards
EFFECTS: Severe leaf damage
COMMENTS: Leaf damage of Golden Delicious in one of three years
REFERENCE: Pielou, D.P. and R.S. Downing, "Trithion as an Orchard Insecticide," Proc. Ent. Soc. of Br. Columbia 55:17-23 (1958).

<3354>
<3354>
CHEMICAL NAME: Phosphorothioic acid, S-[2-(ethylsulfinyl)ethyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Oxydemeton-methyl
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 1.5 pt/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to schefflera and palm
COMMENTS: 2% EC formulation; trade name Meta-Systox R; rated unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<3355>
CHEMICAL NAME: Phosphorothioic acid, S-[2-(ethylsulfinyl)ethyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Oxydemeton-methyl
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 1.5 pt/100 gal--based upon concentration of formulation per 100 gal water
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to schefflera and palm
COMMENTS: 2% EC formulation; trade name Meta-Systox R; rated unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<3356>
CHEMICAL NAME: Phosphorothioic acid, S-[2-(ethylsulfinyl)ethyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Oxydemeton-methyl
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 2 lb/gal EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No growth retardation; minor foliar injury
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3357>
CHEMICAL NAME: Phosphorothioic acid, S-[2-(ethylsulfinyl)ethyl] O,O-dimethyl ester
CHEMICAL COMMON NAME: Oxydemeton-methyl
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Prayer plant (MARANTA LEUCONEURA); Dracena (DRACAENA SANDERIANA); Sword-fern (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
EXPERIMENTAL DOSE: 0.375 and 0.75 lb/100 gal
APPLICATION METHODS: Amount formulated--1.5 and 3.0 pints respectively; 4 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume equivalent); Plyac (spreader-sticker) added to controls and treatments at rate of 2 oz/100 gal water; sprays applied prior to 10:00 a.m.; 5 tests from May to November; temperture--83 to 98 F (day) and 56 to 78 F (night); greenhouse conditions
EFFECTS: A. SQUARROSA--no injury at 0.375 lb, slight injury at 0.75 lb (general chlorosis of foliage); B. ACTINOPHYLLA--slight injury at 0.375 lb (tip necrosis, leaf deformity), moderate injury at 0.75 lb (tip necrosis, marginal chlorosis and necrosis, and leaf deformity); D. SANDERIANA--No injury at 0.375 lb, slight injury at 0.75 lb (tip necrosis); N. EXALTATA--no injury at 0.375 lb, slight injury at 0.75 lb (marginal chlorosis and necrosis, tip necrosis); no injury to other plants
COMMENTS: Experimental concentrations--recommended and twice the recommended rate
REFERENCE: Hamlen, R.A. and R.W. Henley, "Phytotoxicity to Tropical Foliage Plants of Repeated Insecticide and Miticide Applications Under Fiberglass-Covered Greenhouse Conditions," Proc. Fla. State Hort. Soc. 89:336-338 (1976).

<3358>
CHEMICAL NAME: Phosphorothioic acid, O-(2,4-dichlorophenyl) O,O-diethyl ester
CHEMICAL COMMON NAME: Nemacide
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 7.9 lb/gal EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment

<3358> CONT.
EFFECTS: Growth reduction and foliar injury, especially at 0.25% emulsion
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3359>
CHEMICAL NAME: Phosphorothioic acid, O-(2,4-dichlorophenyl) O,O-diethyl ester
CHEMICAL COMMON NAME: V-C 13
PLANT: Bentgrass, creeping (AGROSTIS PALUSTRIS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Bermudagrass, common (CYNODON DACTYLON); Centipede grass (EREMOCHLOA OPHIUROIDES); Quackgrass (AGROPYRON REPENS); Bluegrass, Kentucky (POA PRATENSIS); Redtop (AGROSTIS ALBA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Ryegrass, perennial (LOLIUM PERENNE); St. Augustine's grass (STENOTAPHRUM SECUNDUN); Rapeseed (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 15 and 27 gal/A; EC
APPLICATION METHODS: Soil drench
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Retarded germination and chlorosis of mature plants
COMMENTS: All grasses--retarded germination with chlorosis of some grasses; no adverse effect noted on 70 species of ornamentals, garden plants, trees, and shrubs
REFERENCE: Manzelli, M.A. and V.H. Young, "Tolerance of Plants to V-C 13 Nemacide," Plant Disease Rept. 41(3):195-200 (1957).

<3360>
CHEMICAL NAME: Phosphorothioic acid, O,O-dimethyl O-(3-methyl-4-nitrophenyl) ester
CHEMICAL COMMON NAME: Bay 41831
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 75% EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Minor foliar damage at 0.25%; detrimental effect on growth only at 0.25%
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3361>
CHEMICAL NAME: Phosphorothionic, O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl) ester
CHEMICAL COMMON NAME: Chlorpyrifos
PLANT: Cucumber (CUCUMIS SATIVUS); Tomato (LYCOPERSICON ESCULENTUM); Potato (SOLANUM TUBEROSUM); Pepper, sweet (CAPSICUM FRUTESCENS)
EXPERIMENTAL DOSE: 0.56 kg/ha; 40% EC and 25% WP
APPLICATION METHODS: Preplant and preemergence sprays; 444 l./ha
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted except slight damage to cucumber
COMMENTS: Preplanting treatments of chlorpyrifos and leptophos caused no phytotoxicity to peppers, cucumbers, tomatoes or potatoes and only the latter contained detectable residues of chlorpyrifos, leptophos and/or their degradation products at harvest; postplanting row treatments of chlorpyrifos, leptophos, N2596 and WL24073 effective depending on insecticide and crop; insecticides phytotoxic to peppers, tomatoes or potatoes
REFERENCE: Harris, C.R., H.J. Svec, W.W. Sans, A. Hikichi, S.C. Phatak, R. Frank, and H.E. Braun, "Efficacy, Phytotoxicity, and Persistance of Insecticides Used as Pre- and Postplanting Treatments for Control of Cutworms Attacking Vegetables in Ontario," Proc. Ent. Soc. Ont. 105:65-74 (1975).

<3362>
CHEMICAL NAME: Phthalamic acid, N-(2,3-dichlorophenyl)-
CHEMICAL COMMON NAME: BO 93
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2) M, 10(-3), and 10(-4) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Poor control of shoot emergence at 10(-3) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3363>
CHEMICAL NAME: Phthalic anhydride, 3-nitro-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Severe damage to peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-;

<3363>
<3363> CONT.
aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<3364>
CHEMICAL NAME: Picolinic acid, 3-mercapto-
PLANT: Guineagrass (PANICUM MAXIMUM); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 1x10(-6) to 1x10(-3)M
APPLICATION METHODS: Addition to enzyme extract bundle sheath and mesophyll preparations
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Inhibited enzymes and lowered CO(2)-fixation of bundle sheath cells of PANICUM and no effect on CO(2)-fixation of DIGITARIA mesophyll cells
COMMENTS: Specifically inhibited phosphoenolpyruvate carboxykinase in leaves; both ATP- and ADP-dependent decarboxylation of oxalacetate and carboxylation activity of phosphoenolpyruvate carboxykinase inhibited while phosphoenolpyruvate carboxylase and ribulose-1,5-bisphosphate carboxylase not inhibited
REFERENCE: Ray, T.B. and C.C. Black, "Inhibition of Oxalacetate Decarboxylation during C(4) Photosynthesis by 3-Mercaptopicolinic Acid," J. Biol. Chem. 251(18):5824-5826 (1976).

<3365>
CHEMICAL NAME: Picolinic acid, 4-Amino-3,5-dichloro-6-hydroxy-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: Greater than 8.4 o 5.4 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Severe inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram nd daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3366>
CHEMICAL NAME: Picolinic acid, 4-amino-3,5-dichloro-6-hydroxy-
CHEMICAL COMMON NAME: Picloram, hydroxy-
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 0.5 to 20.0 ppm
APPLICATION METHODS: Nutrient solution addition
EXPERIMENTAL CONDITIONS: Environmental chamber; nutrient solution (glass jar) culture; photoperiod--16 hr; light intensity--1800 ft candles; temperature--22 to 24 C (day) and 9-11 C (night); evaluation time--6 days
EFFECTS: 50% growth reduction of shoot fresh weight at 10.0 ppm
COMMENTS: Pichloram more phytotoxic to sunflower than three pichloram derivatives evaluated
REFERENCE: Grover, R., J.R. Gear, and R. Zerr, "Relative Phytotoxicity of Some Pichloram Derivatives," Bull. Environ. Contam. Toxicol. 14(1):721-725 (1975).

<3367>
CHEMICAL NAME: Piperazine, methyl-
PLANT: Ladysthumb (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 1000mM
APPLICATION METHODS: Test compound dissolved in water or solvent--seed treatments for 24 hr at 25 C
EXPERIMENTAL CONDITIONS: Root length, degree of sterility and mutagenic activity recorded; root length expressed as % of control
EFFECTS: 37.3% root length; no sterility; not found to be mutagenic
COMMENTS: Test concentration defined as sublethal
REFERENCE: Veleminsky, J. and T. Gichner, "The Mutagenic Activity of Nitrosoamines in ARABIDOPSIS THALIANA," Mutat. Res. 5:429-431 (1968).

<3368>
CHEMICAL NAME: Piperidinium, allyltetrahydrogeranyl-, bromide
CHEMICAL COMMON NAME: Piproctanylium bromide
PLANT: Marigold, corn (CHRYSANTHEMUM SEGETUM)
EXPERIMENTAL DOSE: 100 mg/sq m
APPLICATION METHODS: Postemergence spray treatments; volume equivalent of sprayer, 100 mg/sq m
EXPERIMENTAL CONDITIONS: Seeds sown in 80% clay and 20% peat soil mixture; greenhouse germinated with 20 to 26 C daylight temperature and 18-20 C night temperature, 16-hr photoperiod; seedlings transplanted 10 to 21 days after sowing
EFFECTS: Moderate (31-70%) leaf deformation; mild (20-30%) necrosis
COMMENTS: Correlation of callus toxicity with seedling toxicity also reported--researchers note potential use of callus cultures to assess phytotoxicity
REFERENCE: Zilkah, S., P. R. Bocion, and J. Gressel, "Cell Cultures vs. Whole Plants For Measuring Phytotoxicity II. Correlatiions Between Phytotoxicity in Seedlings and Calli," Plant Cell Physiol. 18:657-670 (1977).

<3369>
CHEMICAL NAME: Podolactone
CHEMICAL COMMON NAME: Podolactone
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Growth reduction of wheat and blockage of GA-stimulated pea growth
COMMENTS: Of 524 compounds examined, 71 were found highly active and further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<3370>
CHEMICAL NAME: Podolactone B, 7,8-deepoxy-7,8-didehydro-15,16-dideoxy-
CHEMICAL COMMON NAME: Ponalactone A
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Growth reduction of wheat and blockage of GA-stimulated pea growth
COMMENTS: Of 524 compounds examined, 71 were found highly active and further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<3371>
CHEMICAL NAME: Poly(oxy-1,2-ethandiyl, alpha-tridecyl-omega-hydroxy-
CHEMICAL COMMON NAME: Surfonic TD-90
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: At 1000 ppm reduced survival of PHALAENOPSIS and reduced growth of EPIDENDRUM
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<3372>
CHEMICAL NAME: Poly(oxy-1,2-ethanediyl), alpha-[(1,1,3,3-tetramethylbutyl)phenyl]-omega-hydroxy-
CHEMICAL COMMON NAME: Triton QS-15
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: No adverse effect
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<3373>
CHEMICAL NAME: Poly(oxy-1,2-ethanediyl), alpha-[4-(1,1,3,3-tetramethylbutyl)phenyl]-omega-hydroxy-
CHEMICAL COMMON NAME: Triton X-100
PLANT: Lychee (LITCHI CHINENSIS)
EXPERIMENTAL DOSE: 1:2000, 1:4000, and 1:8000
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No adverse effect
COMMENTS: Lychee leaves susceptible to ionic and nonionic surfactants; injury due to wetting agents ranged from complete necrosis of leaves to chlorosis and mottling and premature leaf fall
REFERENCE: Nakata, S. and Y. Tanada, "Phytotoxicity of Wetting Agents on Lychee," J. Econ. Ent. 54(6):1074-1076 (1961).

<3374>
<3374>
CHEMICAL NAME: Poly(oxy-1,2-ethanediyl), alpha-[4-(1,1,3,3-tetramethylbutyl)phenyl]-omega-hydroxy-
CHEMICAL COMMON NAME: Triton X-100
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<3375>
CHEMICAL NAME: Poly[oxy(chloromethyl)methylsilylene]-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet and radish; postemergence treatment to corn and tomato at 4000 ppm and to millet and bean at 10,000 ppm
EFFECTS: Preemergence--moderate injury to millet and radish; postemergence--no effect
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<3376>
CHEMICAL NAME: Polybon-chlorate
PLANT: Plants
EXPERIMENTAL DOSE: 212.5 lb/ft mi (ft mi x 8.25= lb/A)
APPLICATION METHODS: Spray with asphalt nozzles
EXPERIMENTAL CONDITIONS: Field study; applied to road shoulders just prior to laying asphalt
EFFECTS: Effective control of weeds
COMMENTS: Herbicides useful in reducing cost of maintaining asphalt pavements; presurface application can be expected to give adequate vegetation control at least during season of treatment; post-surface applications required later to prevent encroachment by Bermudagrass from adjacent unpaved areas
REFERENCE: Pruett, L.J. and W.G. McCully, "Presurface Applications of Herbicides for Highways," Down to Earth 17(3):11-12 (1961).

<3377>
CHEMICAL NAME: Polyethylene glycol "300" undecylenamide
CHEMICAL COMMON NAME: Polyethylene glycol "300" undecylenate
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<3378>
CHEMICAL NAME: Polymyxin B
CHEMICAL COMMON NAME: Polymyxin B
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.5, 5.0, and 7.5 ppm
APPLICATION METHODS: Solutions in contact with seed germinating on Saran screen "cloth"
EXPERIMENTAL CONDITIONS: Laboratory study; test solutions aerated; temperature--25 C; in dark; evaluation time--5 da
EFFECTS: At 5.0 ppm and higher concentrations, strong root growth inhibition
COMMENTS: Root growth of young seedlings of barley and other species substantially inhibited when placed in solutions; inhibiting effect suppressed by simultaneous presentation of excess of calcium ions; polymyxin solutions of same concentration had no adverse effect on germination; brief exposure of normal roots of seedlings to 50-100 ppm polymyxin resulted in cessation of further growth or cation uptake, and irreversible injury accompanied by loss of organic and inorganic constituents from root cells; simultaneous presentation of calcium nullified these effects
REFERENCE: Norman, A.G., "The Effect of Polymyxin on Plant Roots," Arch. Biochem. & Biophy. 58:461-477 (1955).

<3379>
CHEMICAL NAME: Potassium azide
CHEMICAL COMMON NAME: Potassium azide
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days

<3379> CONT.
EFFECTS: Complete control of shoot emergence at 10(-2)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3380>
CHEMICAL NAME: Potassium iodide
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 25, 50 and 100 kg/ha
APPLICATION METHODS: Chemical mixed thoroughly in top 7 cm of soil
EXPERIMENTAL CONDITIONS: Greenhouse studies; soil--silt topsoil, sand and peat; fertilized after seeds planted
EFFECTS: No toxicity at 25 kg/ha, 88 and 100% injury at 50 and 100 kg/ha, respectively
COMMENTS: Specific toxic effects not reported
REFERENCE: Chen, S-C. and R.M. Elofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<3381>
CHEMICAL NAME: PPG-116
CHEMICAL COMMON NAME: PPG-116
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Poor sesame tolerance and good barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<3382>
CHEMICAL NAME: PPG-139
CHEMICAL COMMON NAME: PPG-139
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 10.0 lb/A; 5% G
APPLICATION METHODS: Broadcast (G) with spreader; preemergence spray, 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; mature Kentucky bluegrass lawn; soils-sandy and loam; crabgrass seed sown on lawn just prior to applications
EFFECTS: Moderate control of crabgrass but no effect on goosegrass or turf grass
COMMENTS: A-820, CG-10832, PPG-139 and RP-17623 gave good crabgrass control; April versus May application of several of preemergence types show that specific guidelines are needed to obtain efficient crabgrass control; goosegrass control fair to good for several chemicals, but all materials considered poor to unsatisfactory
REFERENCE: Engel, R.E., C.W. Bussey, and P. Catron, "Crabgrass and Goosegrass Control in Turfgrass with Several Preemerge Herbicides," Proc. Northeast. Weed Sci. Soc. 29:369-371 (1975).

<3383>
CHEMICAL NAME: PPG-139
CHEMICAL COMMON NAME: PPG-139
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, creeping red (FESTUCA RUBRA); Crabgrass (DIGITARIA ISCHAEMUM)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Preemergence hand applied granules
EXPERIMENTAL CONDITIONS: Crabgrass control studies in turfgrass; 4 x 5 ft plot with 3 replications; herbicides applied May 1, injury ratings on August 22
EFFECTS: 98% crabgrass control; minor turfgrass injury
COMMENTS: Fescue, bentgrass, and bluegrass tabulated as turfgrass
REFERENCE: Coville, C.M. and J.A. Jagschitz, "Herbicides for Preemergence Crabgrass and Goosegrass Control in Turfgrass--1975," Proc. Northeast. Weed Sci. Soc. 30:367-371 (1976).

<3384>
CHEMICAL NAME: Pregnane-3 beta, 16 alpha-diol, (20S)-20-(5-methyl-2-pyridinyl)-5-alpha-
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Reduced growth of wheat with undefined effects in pea test
COMMENTS: Of 524 compounds examined, 71 were found highly active and a further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<3385>
<3385>
CHEMICAL NAME: Proline, 4-hydroxy-L-, trans
CHEMICAL COMMON NAME: Hydroxyproline
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<3386>
CHEMICAL NAME: Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]-oxime
CHEMICAL COMMON NAME: Aldicarb
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.25, 0.5, and 1.0 lb/A
APPLICATION METHODS: 10% G formulation; postemergence--late-whorl stage and early-boot stage; preemergence treatments also
EXPERIMENTAL CONDITIONS: Experiment 1--11 treatments, 2 rows by 30 ft plots, application July 30 to late-whorl stage of sorghum; experiment 2--7 treatments, 2 rows by 25 ft plots, August 7 insecticide application to early-boot stage of sorghum; experiment 3--27 treatments, 2 rows by 50 ft plots, preemergence treatment, phytotoxicity measured by plant emergence; randomized complete block design with 3 replicates; test compound is insecticide
EFFECTS: No reported toxicity
COMMENTS: Insecticide applied for greenbug control
REFERENCE: Depew, L.J., "Further Evaluation of Insecticides for Greenbug Control on Grain Sorghum in Kansas," J. Econ. Entomol. 65(4):1095-1098 (1972).

<3387>
CHEMICAL NAME: Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]-oxime
CHEMICAL COMMON NAME: Aldicarb
PLANT: Clover, sweet (MELILOTUS sp.); Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 5, 50 and 500 ppm
APPLICATION METHODS: Powder prepared from granular formulation
EXPERIMENTAL CONDITIONS: Plants grown in disposable plastic pouches in 25 ml Bryan's solution; 10 pouches for each concentration and for control; 5 seeds per pouch, grown under 1 amp with 12 hr photoperiod; after germination one ml of 1:5 (w/v) nitragin AB added as inoculom; average dry weight determined after 30 days
EFFECTS: Alfalfa--growth inhibition at all rates, 72% at 500 ppm; sweetclover--inhibition at 50 and 500 ppm, 74% at 500 ppm, growth promoted at 5 ppm

<3388>
CHEMICAL NAME: Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]-oxime
CHEMICAL COMMON NAME: Aldicarb
PLANT: Begonia, Rieger (BEGONIA sp.)
EXPERIMENTAL DOSE: 0.1 and 0.2 g per pot and 156 g per 9.24 m(2)
APPLICATION METHODS: 0.1 and 0.2 g/pot formulated aldicarb (Temik 10G) scattered on top of media and watered in, 156 g formulated aldicarb per 9.24 m(2) broadcast over wet plants
EXPERIMENTAL CONDITIONS: 14-cm diameter clay pots; 4 planting mixes--(1) organic soil:peat:perlite (1:1:1), (2) soil:peat:perlite:Pro-Mix A (1:1:1:1), (3) soil:peat:sand (1:1:1), (4) soil:peat: perlite (2:1:1); greenhouse grown at 21 C; treatments begun February 7, second application 1 month later
EFFECTS: Some phytotoxicity at all applications, more pronounced at 0.2 g/pot and after second application; planting medium had effect in determining extent of phytotoxicity--plants in mixes 2 and 3 appeared to have more damage than plants in mixes 1 and 4
COMMENTS: Ratings--3, 5, and 10 weeks after first application; aldicarb--no control of nematodes at tested rates; phytotoxicity symptoms--marginal leaf burn and distortion of young foliage
REFERENCE: Powell, C.C., R.M. Riedel, and V.R. Walter, "The Effect of Aldicarb on APHELENCHOIDES FRAGARIAE on Rieger Begonia," Plant Dis. Rep. 59(4):370-372 (1975).

<3389>
CHEMICAL NAME: Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
CHEMICAL COMMON NAME: Aldicarb
PLANT: Apple (MALUS SYLVESTRIS); Apricot (PRUNUS ARMENIACA); Cherry (PRUNUS MAHALEB); Cherry (PRUNUS AVIUM); Peach (PRUNUS PERSICA); Pear (PYRUS COMMUNIS); Plum (PRUNUS DOMESTICA)
EXPERIMENTAL DOSE: 6.7 kg/ha
APPLICATION METHODS: Granular (10% G) soil application followed by watering
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--21 to 30 C; soil--Vineland silt loam; pot culture
EFFECTS: No phytoxicity observed
COMMENTS: Oxamyl, aldicarb, and carbofuran reduced nematode numbers; phenamiphos was less effective; oxamyl and aldicarb also controlled aphids and mites
REFERENCE: Allen, W.R. and C.F. Marks, "Chemical Control and Population Studies of PRATYLENCHUS PENETRANS on Fruit Tree Understocks," Plant Dis. Rep. 61(2):84-87 (1977).

<3390>
CHEMICAL NAME: Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
CHEMICAL COMMON NAME: UC-21149
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.0 to 5.0 lb/A
APPLICATION METHODS: Preemergence sprinkle
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Miller Clay; flat culture
EFFECTS: Slight necrosis of seedlings
COMMENTS: Any of chemicals could cause deleterious effects on growth of seedling cotton; UC 21149 employed safely in combination with herbicides Dacthal, diuron, chloro-IPC, and trifluralin
REFERENCE: Boling, J. C. and J. Hacskaylo, "Effect of the Systemic Insecticide UC 21149 and Four Pre-Emergence Herbicides on Cotton Seedlings," J. Econ. Ent. 59(4):1026-1027 (1966).

<3391>
CHEMICAL NAME: Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
CHEMICAL COMMON NAME: Aldicarb
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 1 lb/gal technical aldicarb (Temik) EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No injury
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<3392>
CHEMICAL NAME: Propanal, 2-methyl-2-(methylthio)-, O[(methylamino)-carbonyl]oxime
CHEMICAL COMMON NAME: Temik
PLANT: Carissa (CARISSA GRANDIFLORA); Loquat (ERIOBUTRYA JAPONICA); Euonymous (EUONYMOUS JAPONICUS); Juniper (JUNIPERUS CHINENSIS); Privet (LIGUSTRUM JAPONICUM); Palm, date (PHOENIX CANARIENSIS); Pittosporum (PITTOSPORUM TOBIRO); Podocarpus (PODOCARPUS MACROPHYLLA); Azalea (RHODODENDRON INDICUM); Palm, cabbage (SABAL PALMETTO); Viburnum (VIBURNUM SUSPENSUM)
EXPERIMENTAL DOSE: 10 and 40 lb/A; G
APPLICATION METHODS: Postemergence spray to run-off; 3X applications at weekly intervals
EXPERIMENTAL CONDITIONS: Greenhouse study; temperatures--80 to 85 F (day) and 62 to 68 F (night); RH--60 to 95%; evaluation time--1 wk
EFFECTS: Slight injury to loquat only at 4X (40 lb/A) application rate with no injury to remaining plants
COMMENTS: Almost one-half plants exhibited some phytotoxic response; most sensitive plants were schefflera, fluffy ruffle fern, peperomia, and golden pothos; most toxic chemicals were plictran and omite and least phytotoxic materials were zectran and pirimor
REFERENCE: Short, D.E. and D.B. McConnell, "Pesticide Phytotoxicity to Ornamental Plants," Proc. Fla. St. Hort. Soc. 86:439-442 (1974).

<3393>
CHEMICAL NAME: Propanamide
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: 5 ml solution added to germinating seed in Petri dish
EXPERIMENTAL CONDITIONS: Seeds germinated then transferred to Petri dish; treatment solution added, root growth observed
EFFECTS: 109, 95, and 116% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<3394>
CHEMICAL NAME: Propanamide, N-(3,4-dichlorophenyl)-
CHEMICAL COMMON NAME: Propanil
PLANT: Rice (LEERSIA ORYZOIDES); Feather grass (LEPTOCHLOA CHINENSIS); (ROTTBOELLIA EXALTATA); Nutsedge, purple (CYPERUS ROTUNDUS); Junglerice (ECHINOCHLOA COLONUM); (PHYLLANTHUS sp.); Spurge, painted-leaf (EUPHORBIA HETEROPHYLLA)
EXPERIMENTAL DOSE: 3 kg/ha
APPLICATION METHODS: Application by knapsack sprayer at 670 dm(3)/ha
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; 3 x 5 m plots; visual toxicity and weed control ratings
EFFECTS: Application 16 to 20 days after seeding--satisfactory control of all weeds exept C. ROTUNDUS and R. EXALTATA which were resistent, very minor rice toxicity; application 15 to 20 days after rice emergence--same results as preemergence treatment
COMMENTS: Good weed control but short residual activity; most promising treatment--propanil/butachlor mixture at 3 and 2 kg/ha respectively
REFERENCE: Aryeetey, A.N., "Chemical Weed Control in Rice in Ghana," Ghana J. Agric. Sci. 6:199-204 (1973).

<3395>
<3395>
CHEMICAL NAME: Propanamide, N-(3,4-dichlorophenyl)-
CHEMICAL COMMON NAME: Propanil
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, 10(-4)M, and 10(-5)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Poor control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3396>
CHEMICAL NAME: Propanamide, N-(3,4-dichlorophenyl)-
CHEMICAL COMMON NAME: Propanil
PLANT: Sorghum (SORGHUM BICOLOR); Plants
EXPERIMENTAL DOSE: 10 l/ha
APPLICATION METHODS: Formulation--35% propanil; preemergence applications as spray in 1000 l. water
EXPERIMENTAL CONDITIONS: Rain-fed conditions, light black soil; 4 replications, randomized block design with plot size 610 cm x 458 cm
EFFECTS: No significant effect on sorghum germination; not highly effective in weed control; no effect on grain yield
COMMENTS: Simazine and atrazine more effective in weed control and grain yield than other herbicides tested; combination of simazine (1.25 kg/ha) preemergence plus 2,4-D (1 kg/ha) postemergence also gave good weed control and grain yield
REFERENCE: Krishnamurthy, K., "Effect of Herbicides on Weeds and Yield of Sorghum," Indian J. Agric. Sci. 40(5):474-480 (1970).

<3397>
CHEMICAL NAME: Propanamide, N-(3,4-dichlorophenyl)-
CHEMICAL COMMON NAME: Propanil
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Less than 50% inhibition of all roots and shoots
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<3398>
CHEMICAL NAME: Propanamide, N-(3,4-dichlorophenyl)-
CHEMICAL COMMON NAME: Propanil
PLANT: Plants; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 3.0 kg/ha
APPLICATION METHODS: Broadcast (G) and spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No weed control with slight adverse effect on rice
COMMENTS: 2,4-D and MCPA equally effective in controlling barnyard grass and other annual weeds in transplanted rice; yields significantly increased in nearly all applications; for direct-seeded flooded rice, granular formulations of several new herbicides, such as butachlor, benthiocarb and C-288 highly selective in controlling barnyardgrass and other annual weeds under tropical conditions
REFERENCE: De Datta, S.K., "Chemical Weed Control in Tropical Rice in Asia," PANS 28(4):433-440 (1972).

<3399>
CHEMICAL NAME: Propanamide, N-(3,4-dichlorophenyl)-
CHEMICAL COMMON NAME: Propanil
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 5.1 kg/ha
APPLICATION METHODS: Postemergence spray; 490 l./ha
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--heavy clay paddy-rice field soil; temperature--27 to 37 C; insecticides applied to soil surface; pot culture; fertilizer--ammonium sulfate; evaluation time--up to 21 days
EFFECTS: Synergistic phytotoxicity in terms of dry weight less occurred when rice plants were treated with diazinon or carbaryl insecticides prior to propanil spray application
COMMENTS: Translocation of insecticides, their effect on enzymatic activity in rice, and persistence in soil
REFERENCE: El-Refai, A.R. and M. Mowafy, "Interaction of Propanil with Insecticides Absorbed from Soil and Translocated into Rice Plants," Weed Sci. 21(3):246-248 (1973).

<3400>
CHEMICAL NAME: Propanamide, N-(3,4-dichlorophenyl)-
CHEMICAL COMMON NAME: Propanil
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control with slight leaf damage of rice but no adverse effect on yield
COMMENTS: Propanil selectively controlled ECHINOCHLOA CRUSGALLI; yields of rice increased by 4,700 pounds per acre; injuries observed were necrosis of tips of rice leaves; subsequent growth of rice not adversely affected
REFERENCE: Viste, K.L., "Watergrass Control in Rice," Calif. Agr. 16(3):4 (1962).

<3401>
CHEMICAL NAME: Propanamide, N-(3,4-dichlorophenyl)-
CHEMICAL COMMON NAME: Propanil
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 500 micro M
APPLICATION METHODS: Addition to assay preparations of chloroplasts
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: Increased photochemical activity and chloroplast bleaching
COMMENTS: Dual wavelength spectrophotometry applied to observations of small spectral changes during biochemical reactions in intact tissue; based on principle that absorbance reading at wavelength of isobestic point of reaction fluctuates with time in same manner as reading at wavelength where an absorbance change due to reaction takes place
REFERENCE: Inoue, Y., Yaginuma, N., Ogawa, T., Konishi, K., and K. Shibata, "Spectral Changes of Chloroplasts as a Means to Examine Phytotoxic Effects of Herbicides," in Environmental Toxicology of Pesticides, F. Matsumura, G.M. Boush, and T. Misato (Eds.) Academic Press, New York and London, pp. 549-570 (1972).

<3402>
CHEMICAL NAME: Propanamide, N-(3,4-dichlorophenyl)-
CHEMICAL COMMON NAME: Propanil
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 4.65 to 4.22 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<3403>
CHEMICAL NAME: Propanamide, N-(5-chloro-2-thiozolyl)-
CHEMICAL COMMON NAME: U-14,611
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2) M, 10(-3) M, 10(-4) M, and 10(-5) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Poor control of shoot emergence at 10(-3) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3404>
CHEMICAL NAME: Propanamide, N-ethyl-2-[[(phenylamino)carbonyl]oxy]
CHEMICAL COMMON NAME: Carbetamide
PLANT: Plants; Lotus (LOTUS PEDUNCULATUS)
EXPERIMENTAL DOSE: 1.1, 2.2, and 3.4 kg/ha
APPLICATION METHODS: Preemergence spray; 560 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Tokomaur silt loam, time period--1974 and 1975
EFFECTS: Moderate weed control at 3.4 kg/ha with slight growth reduction and no adverse effect on yield
COMMENTS: Dinoseb most effective of 6 pre-emergence herbicides tested and 2,4-DB best of 5 postemergence herbicides; crop showed no tolerance towards atrazine, cyanazine, metribuzin, or bentazone
REFERENCE: Ivens, G.W., "Preliminary Evaluation of Pre- and Post-Emergence Herbicides in "Maku" Lotus," Proc. 28th. New Zealand Weed and Pest Cont. Conf. 28:31-34 (1975).

<3405>
<3405>
CHEMICAL NAME: Propanamide, N-ethyl-2-[[(phenylamino)carbonyl]oxy]-
CHEMICAL COMMON NAME: Carbetamide
PLANT: Clover, red (TRIFOLIUM PRATENSE); Dock, broad-leaf (RUMEX OBTUSIFOLIUS); Bluegrass, annual (POA ANNUA); Wartcress (CORONOPUS DIDYMUS); Chickweed, mouse-ear (CERASTIUM GLOMERATUM); Spurrey, corn (SPERGULA ARVENSIS); Shepherd's purse (CAPSELLA BURSA-PASTORIS)
EXPERIMENTAL DOSE: 0.5, 1.0 and 2.0 kg/ha
APPLICATION METHODS: Treatments applied by small pressure sprayer at volume rate of 280 l./ha and 2.5 kg/cm2 pressure; preplanting and post-emergence applications
EXPERIMENTAL CONDITIONS: Manawatu sandy loam; 16 mainplots each 3x1m for herbicide treatments and subplots (1.5x1m) as source of dock infestation; herbicides incorporated into top 7.5 cm soil by rotary cultivation; yields measured in kg/ha; seedlings and rootstock
EFFECTS: Seedling dock weights significantly reduced except at 0.5 kg/ha preplant and postplant applications; actively growing root stocks at day 45 reduced 50% by 2 kg/ha preplanting application; at day 236 2 kg/ha caused 40% reduction of rootstock with preplanting and postplanting treatments; 2 kg/ha preplanting gave 85% control of bluegrass, and postplanting treatments of land 2 kg/ha gave 80 and 90% respectively; other species not affected
COMMENTS: No difference between preplant or postplant applications; free to leach down soil profile with rainfall -- more effective control; red clover will tolerate 4-6 kg/ha
REFERENCE: Brock, J.L., "The Control of Broad-Leaved Dock (RUMEX OBTUSIFOLIUS) in Newly-Sown Red Clover (TRIFOLIUM PRATENSE) with Trifluralin, Carbetamide and Asulam," Weed Res. 12:310-315 (1972).

<3406>
CHEMICAL NAME: Propanamide, N-ethyl-2-[[(phenylamino)carbonyl]oxy]-
CHEMICAL COMMON NAME: Carbetamide
PLANT: Grasses; Clover (TRIFOLIUM sp.)
EXPERIMENTAL DOSE: 1.4 to 4.2 lb/A; 70% WP
APPLICATION METHODS: Foliar spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; 10 locations in England
EFFECTS: Moderate to effective control of grass weeds with no adverse effect on clover and improved seed yield
COMMENTS: Value of using 2.1 lb/A, carbetamide for eliminating grass weeds in clover crops to give improved seed yield confirmed; dose of about 1.4 lb/A showed promise for regulation of grasses in clover seed crops
REFERENCE: Soper, D. and A.S. Hutchison, "The Regulation of Grasses in Clover Seed Crops and Pasture Using Carbetamide," Proc. 12th British Weed Cont. Conf. 2:779-786 (1974).

<3407>
CHEMICAL NAME: Propanamide, N-methyl-N-phenyl-3-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--normal wheat growth, slightly abnormal cabbage growth; Petri dish test--no data
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<3408>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: Napropamide
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Tomato (LYCOPERSICON ESCULENTUM); Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Stinkgrass (ERAGROSTIS CILIANENSIS)
EXPERIMENTAL DOSE: 0.5 and 0.75 lb/A
APPLICATION METHODS: Pre-planting spray; 34 gal/acre; rotitilling--3 in. deep; EC formulation
EXPERIMENTAL CONDITIONS: Field study; soil--Norfolk loamy sand; evaluation time--one and three months; seven types of application schedules employed selectively
EFFECTS: Effective control of weeds at both application rates after one month but only moderate control after 3 mos; tomato yield significantly reduced at both rates; combination application with napropamide resulted in effective weed control after 3 mos
COMMENTS: Of a number of herbicides and herbicide combinations evaluated, S-6044 (undisclosed chemistry) applied as preemergence herbicide appeared most promising (excellent weed control without tomato injury)
REFERENCE: Beste, C.E., "Weed Control in Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 28:265-269 (1974).

<3409>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: R-7465
PLANT: Plants; Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/A
APPLICATION METHODS: Preplant incorporated (2 in. soil depth) and posttransplant (same day)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--aprox. 3 mos
EFFECTS: In preplant, effective control of weeds but fewer normal chrysanthemums; in posttransplant, slight to moderate control of weeds and no adverse effect on chrysanthemum yield
COMMENTS: Excellent weed control obtained with number of herbicides; only R-7465 and diphenamid used as soil surface treatments and bensulide gave unsatisfacotry control; various herbicide treatments found to affect growth of chrysanthemum plants to different degrees
REFERENCE: Welker, W.V. and J.C. Cialone, "An Evaluation of Herbicides for the Control of Weeds in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 26:51-54 (1972).

<3410>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: R-7465
PLANT: Broadleaf weeds; Grasses; Nutsedge, yellow (CYPERUS ESCULENTUS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.75 lb/A
APPLICATION METHODS: Preplant incorporated by drag-off; 38 gal/A at 20 psi; 2% EC Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of all weeds except nutsedge (very slight control) with no adverse effect on potato yield
COMMENTS: Incorporated type treatments effective in giving season-long annual grass control, but pre-emergence treatments were not; EPTC only effective material on heavy stand of nutsedge
REFERENCE: Sanok, W.J., "Evaluation of Herbicides for Control of Weeds in Long Island Potatoes-1973," Proc. Northeast. Weed Sci. Soc. 28:282-286 (1974).

<3411>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: Napropamide
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed (AMARANTHUS sp.); Nightshade (SOLANUM sp.); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Nutsedge (CYPERUS sp.)
EXPERIMENTAL DOSE: 2, 4 and 8 lb/a
APPLICATION METHODS: Sprinkler irrigation; furrow irrigation
EXPERIMENTAL CONDITIONS: Not Given
EFFECTS: Herbicide acceptably controlled all weeds tested
REFERENCE: Agamalian, H., B. Fischer, F. Ashton, A. Lange, E. Stilwell, R. Brendler, H. Kempen, V. Schweers, H. Collins, R. King, and L. Buschmann, "Weed Control Studies in Tomatoes, 1968-1970," Calif. Agric. 26(1): 10-11 (1972).

<3412>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: Napropamide
PLANT: Quackgrass (AGROPYRON REPENS); Nightshade, black (SOLANUM NIGRUM); Galinsoga, hairy (GALINSOGA CILIATA); Nettle, stinging (URTICA DIOICA); Sorrell, wood (OXALIS STRICTA); Yellow rocket (BARBAREA VULGARIS); Pine, white (PINUS STROBUS); Juniper, andorra (JUNIPERUS HORIZONTALIS); Yew, spreading (TAXUS CUSPIDATA); Euonymous, sarcoxie (EUONYMUS RADICANS); Purslane, common (PORTULACA OLERACEA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 4 and 8 lb/A
APPLICATION METHODS: Formulation -- 50% WP; sprays applied with knapsack sprayer calibrated to deliver 50 gal/A; preplanting application
EXPERIMENTAL CONDITIONS: Silt loam soil; 10x12 ft plots; fall--quackgrass 6 to 12 in. tall, air temperature 58 degree F, soil temperature at 3 in. depth 45 degree F; spring -- quackgrass 6 to 10 in. tall with 4 to 5 leaves, air temperature 63 degrees F, soil temperature at 3 in. 53 degrees F
EFFECTS: Established sod of quackgrass and other weeds not satisfactorily controlled by November application followed by spring plowing; 8 lb/A incorporated applications gave fair control of quackgrass but good annual weed control in July; 8 lb/A controlled annual weeds all season; no significant effect on white pines, junipers, yews or euonymus
COMMENTS: Author recommends further testing for preplanting use in ornamentals due to long residual activity against annual weeds
REFERENCE: Ahrens, J.F., "Preplant Herbicides for Control of Quackgrass in Ornamentals," Proc. Northeast. Weed Sci. Soc. 28:372-378(1974).

<3413>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: R-7465
PLANT: Purslane, common (PORTULACA OLERACEA); Plants
EXPERIMENTAL DOSE: 1.0, 2.0, 4.0, and 8.0 lb/A
APPLICATION METHODS: Preemergence incorporated (by irrigation); preplant incorporated (disking); pretransplant
EXPERIMENTAL CONDITIONS: Field study; irrigation (sprinkler and furrow); time period--1964, 1965, and 1968
EFFECTS: At 4.0 and 8.0 lb/A, effective control of grass weeds and moderate control of broadleafs with moderate damage to peppers
REFERENCE: Whiting, F.L., L.F. Lippert, and J.M. Lyons, "Chemical Weed Control in Peppers," Calif. Agric. 24(7):8-9 (1970).

<3414>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: R-7465
PLANT: Potato (SOLANUM TUBEROSUM); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: WP formulation; treatments applied with 4-nozzle boom as a spray at 30 psi and 40 gpa volume; preplant incorporated applications
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications for each experiment; plot size--4 rows or 12 ft x 20 ft; Sassafras loam soil; center 2 rows harvested for yield determination
EFFECTS: 78% broadleaf and 66% grass control at 1 lb/A; 64% broadleaf and 77% grass control at 2 lb/A; significant potato yield reduction at 2 lb/A
COMMENTS: Herbicidal effectiveness increased when R-7465 combined with EPTC and vernolate
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

<3415>
<3415>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: Napropamide
PLANT: Ash, green (FRAXINUS PENNSYLVANICA); Poplar, yellow (LIRIODENDRON TULIPIFERA); Walnut, black (JUGLANS NIGRA); Pine, white (PINUS STROBUS); Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 5.0, 10.0, and 15.0 kg/ha
APPLICATION METHODS: Posttransplant spray; 29 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Ross-Geneco complex
EFFECTS: Growth stimulation of all species except red pine (no effect)
COMMENTS: Oxadiazon, napropamide and simazine produced very favorable results at low rates; simazine only injurious to green ash; diphenamid and DCPA effective without incorporation only at extremely high rates; tolerance range for Velpar and RP-23465 for use on newly planted seedlings appear very small; bifenox as used did not appear to be detrimental to seedlings
REFERENCE: Wiltrout, T.R. and H.A. Holt, "Prospects of Controlling Vegetation in New Forest Plantations," Proc. N. Cent. Weed Control Conf. 30:31-36 (1975).

<3416>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: R-7465
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 4 and 8 lb/A
APPLICATION METHODS: Incorporated treatments in 28 gpa solution
EXPERIMENTAL CONDITIONS: Fall and spring application; 5 to 6 inch incorporation; plots--4 x 20 ft with 3 replications; monthly nutsedge counts; field studies
EFFECTS: Fall--significant control only at month 3 after treatment and at 8 lb/A; spring--no significant control at any month or application
REFERENCE: Locascio, S.J. and W.L. Currey, "Yellow Nutsedge (CYPERUS ESCULENTUS) control and Vegetable Crop Tolerance with Various Herbicides," Proc. South. Weed Sci. Soc. 26:259-266 (1973).

<3417>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: R-7465
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A; WP
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 40 gal/A; 730616 TeeJet spray tip at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Moderate control of weeds with no potato yield reduction in preplant incorporated applications
COMMENTS: Preplant incorporated herbicides R-7465, EPTC, and vernolate good single herbicides; increases in herbicidal effectiveness obtained when EPTC and vernolate combined with R-7465; alachlor alone excellent herbicide applied preemergence; increased weed control effectiveness resulted when this herbicide combined with linuron, chlorbromuron, metobromuron, methazole, or dinoseb
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

<3418>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: Napropamide
PLANT: Quackgrass (AGROPYRON REPENS); Nutsedge, yellow (CYPERUS ESCULENTUS); Lamb's-quarters (CHENOPODIUM ALBUM); Yew, upright (TAXUS CUSPIDATA); Chickweed, common (STELLARIA MEDIA); Horseweed (ERIGERON CANADENSIS); Vetch, bird (VICIA CRACCA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Carpetweed (MOLLUGO VERTICILLATA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 3 and 6 lb/A
APPLICATION METHODS: Formulation--50% WP; sprays applied with hand-held boom to deliver 50 gal/A
EXPERIMENTAL CONDITIONS: Yews (5 years old) spaced at 2 foot intervals in rows 3 feet apart; herbicides applied on December 1, 1970 and again on December 9, 1971; soil was moist and 39 degrees F at 3 inch depth at 1970 treatment, air temperature was 45 degrees F ; December 1971 application -- 1 to 3 inches snow on ground and air temperature 39 degrees F
EFFECTS: Quackgrass--control more effective at 6 lb/A; nutsedge--good control, not a great difference between applications of 6 and 3 lb/A; annual grasses--excellent season long control; Pennsylvania smartweed--no control; no appreciable injury to yews
COMMENTS: Excessive rainfall second growing season accelerated hebicide leaching; results of weed control with combinations of herbicides also reported
REFERENCE: Ahrens, J.F., "Fall Applications of Herbicides for Control of Quackgrass and Yellow Nutsedge in TAXUS CUSPIDATA CAPITATA," Proc. Northeast. Weed Sci. Soc. 28:379-385(1974).

<3419>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: R-7465
PLANT: Broadleaf weeds; Grasses; Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preemergence directed spray; 50 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Hartsell's loam; time period--1970 to 1972
EFFECTS: Effective control of all grasses with no adverse effect on apple trees
COMMENTS: Terbacil, simazine+paraquat, and R-7465 treatments effectively controlled annual broadleaf and annual grass weeds during 1971-1972; certain perennial weed species not controlled effectively in the terbacil treated plots; spring and summer applications of glyphosate at three rates provided good contact kill of existing weeds, but reinfestation of plots with annual weeds, especially crabgrass, a problem
REFERENCE: Mullins, C.A., H.D. Swingle, and D.L. Coffey, "Growth and Field Response of Apple Trees to Certain Herbicides," Proc. S. Weed Sci. Soc. 26:225-229 (1973).

<3420>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: R-7465
PLANT: Millet, Japanese (ECHINOCHLOA CRUSGALLI); Sorghum, grain (SORGHUM BICOLOR); Nutsedge, yellow (CYPERUS ESCULENTUS); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.12, 2.24, and 4.48 kg/ha
APPLICATION METHODS: Preplant spray; 37 dkl./ha; soil incorporated (10 cm depth)
EXPERIMENTAL CONDITIONS: Field study; soil--Hespera sandy loam and Hespera loamy sand; evaluation time--2 and 5 wk and harvest; sorghum and millet used as bioassay plants in persistence evaluation
EFFECTS: Moderate control of nutsedge with severe damage to millet and sorghum with marked yield reduction of seed cotton at all rates
COMMENTS: All herbicides controlled nutsedge for at least 1 month in two or more experiments; cotton most tolerant to applications of CP-53619, of prometryne, of San-6706, and of methazole; higher rates of San-6706, and methazole and all rates of alachlor, R-7465, and R-12001 reduced yield of cotton in one or more experiments
REFERENCE: Keeley, P.E., J.H. Miller, and C.H. Carter, "Weed and Cotton Response to Several Herbicides," Weed Sci. 21(4):327-329 (1973).

<3421>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: R-7465
PLANT: Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Cudweed, low (GNAPHALIUM ULIGONOSA); Broccoli (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Cabbage (BRASSICA OLERACEA); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 1.7 and 3.4 kg/ha
APPLICATION METHODS: Preplant spray with soil incorporation by disking
EXPERIMENTAL CONDITIONS: Field study; 5 year period
EFFECTS: Effective control of weeds in one trial only with yield reduction of brussels sprouts and cauliflower at 3.4 kg/ha
COMMENTS: Trifluralin, DCPA, and nitrofen gave eratic weed control and must be applied at highest rates of application permitted by label for even average weed control in most years; two new herbicides pryanchlor and DMC 3950 show promise for use on cole crops in Eastern Canada
REFERENCE: Ivany, J.A. and J.A. Cutcliffe, "Herbicides for Cole Crops in Eastern Canada," Proc. Northeast. Weed Sci. Soc. 27:194-198 (1973).

<3422>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: R-7465
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Cotton (GOSSYPIUM HIRSUTUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.12, 2.24, and 4.48 kg/ha
APPLICATION METHODS: Soil surface spray (preplant) with incorporation; 56 dkl/ha; depth--6.35 cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Hesperia fine sandy loam; temperature--27 to 31 C; nutsedge tubers and cotton seed planted; plastic container culture; evaluation time--up to 8 wk
EFFECTS: Effective control of yellow nutsedge; slightly less effective against purple nutsedge; cotton fairly tolerant to CP-53619
COMMENTS: All treatments except lowest rate of alachlor and VCS-438 controlled yellow nutsedge for 8 weeks; these and other compounds less effective against purple nutsedge; all herbicides moderately to severely damaged cotton except CP-53619 and R-7465
REFERENCE: Keeley, P.E., C.H. Carter, and J.H. Miller, "Evaluation of the Relative Toxicity of Herbicides to Cotton and Nutsedge," Weed Sci. 20(1):71-74 (1972).

<3423>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: Napropamide
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: In direct-seeded tomato preplant application, poor control of broadleaf weeds and moderate control of grass with reduced tomato yield; better weed control in transplant application with no effect on tomato
COMMENTS: Metribuzin, napropamide and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; buzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<3424>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: Napropamide
PLANT: Crabgrass (DIGITARIA ISCHAEMUM); Bluegrass, Kentucky (POA PRATENSIS); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 2.24 to 4.48 kg/ha; 5% G
APPLICATION METHODS: Preemergence spray (40 psi and 50 gal/A) and granule broadcast
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; evaluation time--up to 5 mo
EFFECTS: At 2.24 kg/ha, moderate control of crabgrass with slight damage to turfgrasses

<3424>
<3424> CONT.
COMMENTS: Best control of crabgrass in both turf species obtained by DCPA, butralin, AC-92390, and prosulfalin; all rates of granular HOE-22870 provided good crabgrass control in red fescue; in bluegrass, HOE-22870 controlled crabgrass only at the high rate or when the low rate was reapplied
REFERENCE: Watschke, T.L., D.J. Wehner, and J.M. Duich, "Pre- and Postemergence Crabgrass Control in Turf," Proc. NE Weed Sci. Soc. 30:358-366 (1976).

<3425>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: Napropamide
PLANT: Pepper, hot (CAPSICUM ANNUUM); Santa Maria (PARTHENIUM HYSTEROPHORUS); Nutsedge, purple (CYPERUS ROTUNDUS); (CLEOME CILIATA); (BOERHAVIA DIFFUSA); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); Pinkroot (SPIGELIA ANTHELMIA); Junglerice (ECHINOCHLOA COLONUM); Wiregrass (ELEUSINE INDICA); Sandbur (CENCHRUS ECHINATUS)
EXPERIMENTAL DOSE: 3 kg/ha
APPLICATION METHODS: Preplanting incorporated treatment
EXPERIMENTAL CONDITIONS: Seed bed trial; application 3 days before sowing
EFFECTS: Treatment not considered satisfactory
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<3426>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: R-7465
PLANT: Rape, target (BRASSICA NAPUS); Maple, vine (ACER CIRCINATUM); Turnip (BRASSICA RAPA); Cabbage (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Cauliflower (BRASSICA OLERACEA); Rutabaga (BRASSICA NAPOBRASSICA); Broccoli (BRASSICA OLERACEA); Pimpernel, common (ANAGALLIS ARVENSIS); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM); Fumitory (FUMARIA OFFICINALIS); Hempnettle (GALEOPSIS TETRAHIT); Cleavers (GALIUM APARINE); Fingergrass (CHLORIS sp.); Deadnettle, purple (LAMIUM PURPUREUM); Chamomile, wild (MATRICARIA sp.); Bluegrass, annual (POA ANNUA); Knotweed (POLYGONUM AVICULARE); Buckwheat, wild (POLYGONUM CONVOLVULUS); Tearthumb (POLYGONUM PERFOLIATUM); Groundsel, common (SENECIO VULGARIS); Popolo (SOLANUM NIGRUM); Spurrey, corn (SPERGULA ARVENSIS); Chickweed, common (STELLARIA MEDIA); Nettle, dog (URTICA URENS); Speedwell (VERONICA sp.); Crunchweed (SINAPIS ARVENSIS)
EXPERIMENTAL DOSE: 0.85 - 2.5 lb/A; WP
APPLICATION METHODS: Preplant spray soil incorporated; 25 lb/sq. in. and 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; 9 locations in Britain; evaluation time--28 to 60 days
EFFECTS: At 1.25 lb/A, moderate to effective control of weeds except ANAGALLIS, CAPSELLA, GALEOPSIS, POLYGONUM PERSICARIA,, SINAPSIS, SOLANUM, STELLARIA, and VERONICA (no or slight control) with no adverse effect on crops except rape and kale (slight) at two locations only
COMMENTS: Weed control with 1.25 lb/A generally found acceptable, control being more effective in crops planted on flat ground as opposed to crops grown on ridges; vegetable brassicae and drilled root brassicae showed good tolerance of R.7465, but tolerance of drilled forage brassicae variable
REFERENCE: Griffiths, G.P. and C.T. Lake, "An Evaluation of R.7465 for the Control of Annual Weeds in Brassica Crops," Proc. 11th. Br. Weed Cont. Conf. 11(1):138-142 (1972).

<3427>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: Devrinol
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Pretransplant application to soil; rototilling to 3-4 in. depth; broadcast spray; 43 gal/A
EXPERIMENTAL CONDITIONS: Field study; normal cultivation
EFFECTS: Effective weed control; slight loss in vigor of tobacco plants but insignificant effect on yield
COMMENTS: Several herbicides or herbicide combinations provided effective weed control without affecting tobacco yield
REFERENCE: Chapman, W.H., "Weed Control and Crop Tolerance with Various Herbicides Applied to Florida Shade Tobacco", Proc. S. Weed Sci. Soc. 26:170-172 (1973).

<3428>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: Napropamide
PLANT: Potato (SOLANUM TUBEROSUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 2.0 to 4.0 lb/A
APPLICATION METHODS: Preemergence, pre-plant incorporated, or postemergence sprays; 30 to 35 lb/sq in at 18 to 43 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Haven loam
EFFECTS: Preplant incorporated, 3.0 lb/A--moderate weed control with no adverse effect on potato
COMMENTS: Outstanding treatments were CGA 24705 applied preemergence or pre-soil incorporated, maintaining 80% control or better for at least three months; results excellent also with EPTC, alachlor, napropamide, and FMC 25213; several herbicides in combination also effective
REFERENCE: Selleck, G.W. and L.E. Weber, "Herbicide Trials for Yellow Nutsedge in Potatoes on Long Island," Proc. NE Weed Sci. Soc. 30:239-242 (1976).

<3429>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: Napropamide
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: In direct-seeded tomato preplant application, poor control of broadleaf weeds and moderate control of grass with reduced tomato yield; better weed control in transplant application with no effect on tomato
COMMENTS: Metribuzin, napropamide, and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 was promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes, activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<3430>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: Napropamide
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 1.8 kg/ha
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Moderate control of weeds and slight reduction in peanut vigor
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit futher testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<3431>
CHEMICAL NAME: Propanamide, N,N-diethyl-2-(1-naphthalenyloxy)-
CHEMICAL COMMON NAME: Napropamide
PLANT: Pigweed (AMARANTHUS sp.); Purslane, common (PORTULACA OLERACEA); Santa Maria (PARTHENIUM HYSTEROPHORUS); (PHYLLANTHUS AMARUS); Wiregrass (ELEUSINE INDICA); Junglerice (ECHINOCHLOA COLONUM); Crabgrass (DIGITARIA INSULARIS); Nutsedge, purple (CYPERUS ROTUNDUS); Cabbage (BRASSICA OLERACEA); Tomato (LYCOPERSICON ESCULENTUM); Pepper, sweet (CAPSICUM FRUTESCENS); Groundnut (PANAX TRIFOLIUM); Watermelon (CITRULLUS VULGARIS)
EXPERIMENTAL DOSE: 1.5 and 3.0 kg/ha
APPLICATION METHODS: Preemergence and preplanting treatments
EXPERIMENTAL CONDITIONS: Loam soil; non-field experiments
EFFECTS: Preplanting 1.5 kg/ha--cabbage, tomato, sweet pepper, groundnut, and watermelon, safe, moderate weed control; preplanting 3.0 kg/ha--tomato and groundnut safe, cabbage, sweet pepper, and watermelon unsafe, good weed control; preemergence 1.5 kg/ha--crop safety and weed control same as preplanting 1.5 kg/ha; preemergence 3.0 kg/ha--cabbage, tomato, sweet pepper, and groundnut safe, watermelon unsafe, weed control good
COMMENTS: Preplanting application most effective
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<3432>
CHEMICAL NAME: Propanamide, N,N-dimethyl-3-phenyl-
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A; 1, 10, and 100 ppm
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--abnormal growth, more pronounced in wheat; Petri dish test--93, 29, and 21% wheat root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<3433>
CHEMICAL NAME: Propanamide, 2-(4-chloro-2-methylphenoxy)-N-phenyl-
CHEMICAL COMMON NAME: U-22,326
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, 10(-4)M, and 10(-5)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days

<3433>
<3433> CONT.
EFFECTS: Poor control of shoot emergence at 10(-3) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3434>
CHEMICAL NAME: Propanamide, 2,2-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: 5 ml solution added to germinating seed in Petri dish
EXPERIMENTAL CONDITIONS: Seeds germinated then transferred to Petri dish; treatment solution added, root growth observed
EFFECTS: 103, 93, and 120% root growth at 1, 10, and 100 ppm, respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<3435>
CHEMICAL NAME: Propanamide, 3-phenyl
PLANT: Wheat (TRITICUM AESTIVUM); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 30 lb/A
APPLICATION METHODS: Preplanting treatment as 5% dust for box test and preemergence treatment as 5 ml of 2% aqueous acetone solution (lb/A) for pot test; 5 ml solution also used for Petri dish test (ppm)
EXPERIMENTAL CONDITIONS: Box test--seedboxes, 5% dust mixed with soil then wheat, cabbage, and ryegrass seeds planted, greenhouse grown, plants measured every 3 days, results obtained 14 days after emergence of control (no treatment) seeds; pot test--wheat and cabbage seeds planted in 2 in. of soil in beakers, 5 ml solution applied 2 days after planting, controls received only 2% acetone solution, results taken 14 days after emergence of control seeds; Petri dish test--wheat root elongation measured
EFFECTS: Box test--no data; pot test--normal growth; Petri dish test--no data
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<3436>
CHEMICAL NAME: Propane, 1-chloro-2-nitro
CHEMICAL COMMON NAME: Lanstan
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments; 4% EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; sterilized and unsterilized Cahaba sandy loam and Decatur clay loam; plot--8 lb of soil in 1-gal can; fungicide (Lanstan) incorporated to 38 mm depth, cotton seeds planted at 19 mm; 18 to 21 C for first two weeks then 24 to 27 C for remainder of test; 3 replications for each of 4 soils
EFFECTS: Plant height at 2 weeks greater than check; at 7 weeks, no significant difference in plant height compared with check
REFERENCE: Kappelman, A.J., Jr. and G.A. Buchanan, "Influence of Fungicides, Herbicides and Combinations on Emergence and Seedling Growth of Cotton," Agron. J. 60:660-663 (1968).

<3437>
CHEMICAL NAME: Propane, 1,2-dibromo-3-chloro
CHEMICAL COMMON NAME: Nemagon
PLANT: Bean, snap (PHASEOLUS VULGARIS); Brinjal; Tomato (LYCOPERSICON ESCULENTUM); Velvetgrass, slender (HOLCHUS MOLLIS)
EXPERIMENTAL DOSE: 0.5, 1.0, and 2.0 ml/pot; 3.5 and 7.0 gal/A
APPLICATION METHODS: Addition to soil or "fumigation"
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: Generally reduced germination or growth of all test species although effects relatively minor
COMMENTS: Soil fumigation with nemagon prior to sowing reduced germination of bean and bhendi seed; aeration of the fumigated soil, i.e., plant six days after fumigation improved germination; shorter interval of time between fumigation and planting resulted in delayed germination and stunted growth of seedlings
REFERENCE: Vijaya, N. and B.R. Reddy, "Effect of Nemagon on Seeds and Seedlings of Certain Vegetable Crops," Andhra Agric. J. 18(3-4):116-121 (1973).

<3438>
CHEMICAL NAME: Propane, 1,2-dibromo-3-chloro
PLANT: Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: 3 gpa
APPLICATION METHODS: Preplanting application
EXPERIMENTAL CONDITIONS: Roots of uniform size and maturity selected 90 days after planting; for electron microscopic studies, transectional slices of phloem approximately 1 mm fixed by Karnovsky's fixation and osmium tetroxide
EFFECTS: Chromoplasts -- larger and contained more globules and crystals than control carrot chromoplast, short needle-like crystals
COMMENTS: Chromoplast--carotenoid containing plastid
REFERENCE: Wu, M. and D.K. Salunkhe, "Influence of Soil Fumigation of Telone and Nemagon on the Ultrastructure of Chromoplasts in Carrot Roots (DAUCUS CAROTA L.)," Experientia 27:712-713 (1971).

<3439>
CHEMICAL NAME: Propane, 1,2-dibromo-3-chloro
CHEMICAL COMMON NAME: Nemagon
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.2 and 0.5 ml/kg (of soil)
APPLICATION METHODS: Application to soil; injected into fertilized soil
EXPERIMENTAL CONDITIONS: Greenhouse study; saline soil; pot culture; evaluation time--45 da
EFFECTS: Reduced growth at 0.5 ml/kg
COMMENTS: Healthy growth and root systems positively correlated to nutrient release caused by nemagon; effects due to nematocidal action of fumigant along with elimination of gall formations from roots; 0.5 ml dose resulted in phytotoxicity; injury to root system caused by toxic limits of halides released during decomposition of higher doses of nemagon reduced uptake of NPK by plants and resulted in stunted growth
REFERENCE: Singhal, J.P. and C.P. Singh, "The Chemistry and Phytotoxicity of Nemagon in Fertilized Soil," Soil Sci. Plant Nutr. 20(1):413-415 (1974).

<3440>
CHEMICAL NAME: Propane, 1,2-dibromo-3-chloro-
CHEMICAL COMMON NAME: DBCP
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 15.9 ml/100 ft of row; EC and G
APPLICATION METHODS: Gravity flow for liquid and granular insecticide applicator
EXPERIMENTAL CONDITIONS: Field study; soil--tifton sandy loam
EFFECTS: Reduction in vigor and yield of tomato
COMMENTS: Phytotoxicity to tomatoes from DBCP applied at planting related to depth of application; phytotoxicity less when DBCP applied 12 inches below soil surface than for comparable application 5 inches deep
REFERENCE: Good, J.M., "Evaluation of DBCP Formulations and Application Depths for Root-Knot Nematode Control and Phytotoxicity to Tomatoes," Plant Disease Rept. 45(12):976-978 (1961).

<3441>
CHEMICAL NAME: Propanedioic acid, hydroxy-
CHEMICAL COMMON NAME: Hydroxymalonic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<3442>
CHEMICAL NAME: Propanedoic acid
CHEMICAL COMMON NAME: Malonic acid
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 3 x10 (-3) m
APPLICATION METHODS: Submersion of oat coleoptiles
EXPERIMENTAL CONDITIONS: Laboratory study; oat coleoptile assay--increased or inhibited growth of 3mm sections in solutions containing sucrose, IAA, and experimental compounds; coleoptile age--66-69 hr (and at other times)
EFFECTS: No inhibition or stimulation of growth
COMMENTS: Most organic acids accelerated growth in absence of inhibitor but in presence of auxin and sucrose or auxin alone, inhibition of growth by low concentrations of iodoacetate and reversal of inhibition by certain organic acids; sensitivity of sections both to inhibitor and to growth promoting effect of the acids varied with age of the plants; lowest concentration causing definite inhibition steadily decreased with increasing age
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. I. The Action of Iodoacetate and Organic Acids on the AVENA Coleoptile," Am. J. Bot. 35:271-281 (1948).

<3443>
CHEMICAL NAME: Propanenitrile, 2-[[4-(ethylamino)-6-(methylthio)-1,3,5-triazin-2-yl]amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanatryn
PLANT: Chara (CHARA sp.); Stonewort (NITELLA sp.); Pondweed, horned (ZANNICHELLIA PALUSTRIS); Duckweed (LEMNA POLYRRHIZA); (OENANTHE SILAIFOLIA); Speedwell, water (VERONICA CATENATA); Myriophyllum (MYRIOPHYLLUM SPICATUM); Elodea (ELODEA CANADENSIS); Pondweed, curly-leaf (POTOMOGETON CRISPUS); Pondweed, sago (POTOMOGETON PECTINATUS); Coontail (CERATOPHYLLUM DEMERSUM); Starwort, water (CALLITRICHE STAGNALIS); Mare's tail, common (HIPPURIS VULGARIS); Pondweed (POTAMOGETON BERCHTOLDII); Crowfoot, whitewater (RANUNCULUS AQUATILIS); Duckweed (LEMNA MINOR)
EXPERIMENTAL DOSE: 0.05 to 0.5 ppm; WP, G, and pellets
APPLICATION METHODS: Spray, granule applications, and hand broadcasting
EXPERIMENTAL CONDITIONS: Field study; time period--1972 to 1974; static and flowing water
EFFECTS: Most plants effectively controlled at 0.2 ppm; all formulations about equally effective
COMMENTS: In range of 0.05-0.5 ppm, cyanatryn gave consistently good control of many submerged vascular plants and algae in static water; in flowing water, method of calculating effective dose from rate of flow and cross sectional area reported
REFERENCE: Haddow, B.C., F.R. Stovall, and D.H. Payne, "Field Trials with Cyanatryn (WL6 3611) for the Control of Aquatic Weeds," Proc. 12th. Br. Weed Cont. Conf. 12(1):239-248 (1974).

<3444>
<3444>
CHEMICAL NAME: Propanenitrile, 2-[[4-(ethylamino)-6-(methylthio)-1,3,5-triazin-2-yl]amino]-2-methyl-
CHEMICAL COMMON NAME: WL 63611
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS); Sugarcane (SACCHARUM sp.); Pigweed, spiny (AMARANTHUS SPINOSUS); Apple of Peru (NICANDRA PHYSOLODES); (CLEOME MONOPHYLLA); Purslane, common (PORTULACA OLERACEA); Deadnettle (LAMIUM sp.); Peppergrass (LEPIDIUM DIDYMUS)
EXPERIMENTAL DOSE: 1 and 2 kg/ha
APPLICATION METHODS: Preemergence spray; 50% WP formulation
EXPERIMENTAL CONDITIONS: Field studies; randomized block design with 4 replications
EFFECTS: No nutsedge injury; poor to moderate broadleaf weed control over 84 day period; commercially unacceptable broadleaf control after 84 days
COMMENTS: Results tabulated for nutsedge, other weeds grouped as broadleaves
REFERENCE: Iggo, G.A., "Results of Screening Pre-emergence Herbicides for Sugarcane," Proc. S. Afr. Sugar Technol. Assoc. 49:122-125(1975).

<3445>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(cyclopropylamino)-1,3,5-triazin-2-yl]amino]-
CHEMICAL COMMON NAME: Procyazine
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, large (DIGITARIA SANGUINALIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0, 2.4, and 3.0 lb/A
APPLICATION METHODS: Pre- and postemergence sprays at rate of 40 gpa in water
EXPERIMENTAL CONDITIONS: Randomized complete block design with 3 replications; 9 x 22 ft plot size; Paxton fine sandy loam; preemergence treatments made May 23, postemergence treatments on June 9; visual rating
EFFECTS: Preemergence--2.0 and 2.4 lb/A gave good crabgrass and fair pigweed control in June, by October, control of both fair; postemergence--2.4 and 3.0 lb/A gave good season long control of crabgrass, pigweed control good but somewhat less than crabgrass; corn yield greater than check, preemergence yield slightly better than postemergence yield
REFERENCE: Dest, W.M., R.A. Peters, and M. Barrett, "The Control of Crabgrass and Redroot Pigweed in Silage Corn," Proc. Northeast. Weed Sci. Soc. 30:55-58 (1976).

<3446>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(cyclopropylamino)-1,3,5-triazin-2-yl]amino]-2-methyl-
CHEMICAL COMMON NAME: Procyazine
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0, 2.4, and 3.2 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam
EFFECTS: At all rates, effective control of broadleaf weeds and moderate control of grasses with no adverse effect on corn yield
COMMENTS: Butylate and EPTC+R-25788 preplant incorporated applications provided excellent grassy weed control; fall panicum and crabgrass control obtained by various combination treatments which included alachlor, procyazine, atrazine, penoxalin, bifenox, metolachlor, or Vel 5026
REFERENCE: Vengris, J., "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 31:1-5 (1977).

<3447>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(cyclopropylamino)-1,3,5-triazin-2-yl]amino]-2-methyl-
CHEMICAL COMMON NAME: Procyazine
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 2.0, 2.8, 3.2, and 4.0 lb/A
APPLICATION METHODS: Preplant incorporated (disc), preemergence and postemergence sprays; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 12 locations in IA
EFFECTS: Moderate weed control in all applications with preemergence application being most effective
COMMENTS: Preplant-incorporated treatments more consistent in grass and broadleaf weed control than preemergence treatments; preplant-incorporated herbicide butylate plus R-25788 and EPTC plus R-25788 and preplant or preemergence chemical such as alachlor and CGA-24705 provided good to excellent grass control but needed assistance of broadleaf controlling herbicides such as atrazine, cyanazine, and procyazine
REFERENCE: Studt, D.M. and V.M. Jennings, "Corn Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:146-150 (1975).

<3448>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(cyclopropylamino)-1,3,5-triazin-2-yl]amino]-2-methyl-
CHEMICAL COMMON NAME: Procyazine
PLANT: Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed, prostrate (AMARANTHUS BLITOIDES); Mustard, wild (BRASSICA KABER); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Witchgrass, old- (PANICUM CAPILLARE); Foxtail, yellow (SETARIA GLAUCA); Foxtail, giant (SETARIA FABERI)
EXPERIMENTAL DOSE: 1.8 to 3.6 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--medium textured; two locations (NY and MD)
EFFECTS: At 2.7 kg/ha or less, effective control of all broadleaf weeds and grasses except foxtails (moderate control) and witchgrass
COMMENTS: Procyazine and cyanazine gave good control of most annual grass and broadleaf weeds; 3:1 ratio of procyazine + atrazine increased weed control spectrum over procyazine used alone
REFERENCE: Higgins, E.R., M.G. Schnappinger, and S.W. Pruss, "Procyazine for Annual Grass and Broadleaf Control in Corn," Proc. Northeast. Weed Sci. Soc. 29:63-67 (1975).

<3449>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.4 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam
EFFECTS: At all rates, effective control of broadleaf weeds and moderate control of grasses with no adverse effect on corn yield
COMMENTS: Butylate and EPTC+R-25788 preplant incorporated applications provided excellent grassy weed control; fall panicum and crabgrass control obtained by various combination treatments which included alachlor, procyazine, atrazine, penoxalin, bifenox, metolachlor, or Vel 5026
REFERENCE: Vengris, J., "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 31:1-5 (1977).

<3450>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: SD-15418
PLANT: Soybean (GLYCINE MAX); Alfalfa (MEDICAGO SATIVA); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 2.26 kg/ha
APPLICATION METHODS: Preemergence applications with tractor mounted small-plot sprayer in 217 l./ha water at spray pressure of 2.11 kg/cm2
EXPERIMENTAL CONDITIONS: Herbicide applied to cornfield -- 20 soil samples from upper 10.16 cm of soil taken from each experiment 6, 12, 18, and 26 weeks after corn sowing; Bolivia silt loam soil and Keomah silt loam soil; soil samples from each of 4 replications of each treatment combined to form composite samples; 8 seeds of alfalfa, oats or soybeans planted in 4 pots of soil from each treatment; pots placed in growth chamber 25 days -- day length 13 hours
EFFECTS: Alfalfa yields reduced only at 6 or 12 weeks; oats grown in 26 week soil sample showed no growth reduction, other samples had some growth reduction; no significant reduction of soybean yield at any collection date
COMMENTS: Results suggest that residual injury (carryover injury) is less likely when soybeans rather than oats or alfalfa follow corn; elimination of carryover injury probable by using short-residual herbicides such as alachlor and by combination of small amounts of persistent herbicides (cyprazine or atrazine) with short-residual herbicides
REFERENCE: Fink, R.J., "Phytotoxicity of Herbicide Residues in Soils," Agron. J. 64:804-805 (1972).

<3451>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Moderate control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3452>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 2, 3 and 4 lb/A
APPLICATION METHODS: WP formulation; spray applied in 40 gpa volume
EXPERIMENTAL CONDITIONS: Sassafras loam soil; plots--4 rows or 14 ft x 20 ft; randomized block design with 3 replications; May 24 planting and August 8 ratings and harvest; center 2 rows of each plot used for yield determination
EFFECTS: 84% broadleaf and 60% grass control at 2 lb/A; 90% broadleaf and 78% grass control at 3 lb/A; 93% broadleaf and 77% grass control at 4 lb/A; no significant effect on corn
COMMENTS: Addition of alachlor to cyanazine did not improve weed control
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

<3453>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 2.0, 3.0, and 4.0 lb/A
APPLICATION METHODS: Preplant incorporated (disc), preemergence, and postemergence sprays; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 12 locations in IA
EFFECTS: At 4.0 lb/A, effective control of broadleaf weeds and moderate control of grasses; preemergence spray was most effective
COMMENTS: Preplant-incorporated treatments more consistent in grass and broadleaf weed control than

<3453>
<3453> CONT.
preemergence treatments; preplant-incorporated herbicide butylate plus R-25788 and EPTC plus R-25788 and preplant or preemergence chemical such as alachlor and CGA-24705 provided good to excellent grass control but needed assistance of broadleaf controlling herbicides such as atrazine, cyanazine, and procyazine
REFERENCE: Studt, D.M. and V.M. Jennings, "Corn Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:146-150 (1975).

<3454>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 2.0-4.0 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays; 60 gal/A; applied singly and in combination in some instances
EXPERIMENTAL CONDITIONS: Field study; no cultivation
EFFECTS: Cyanazine was effective only at the 4.0 lb/A application rate or in combinations on these grasses
COMMENTS: Postemergence treatments generally less effective on crabgrass and panicum and more effective on foxtails; sometimes only 2 or 3 plant species tested
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

<3455>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Corn (ZEA MAYS); Plants
EXPERIMENTAL DOSE: 1.0, 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Spray; 40 gal/A at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sarpy fine sandy loam; time period--1970 and 1971
EFFECTS: Effective control of weeds but moderate injury to and reduced yield of sweet corn
COMMENTS: No herbicide used significantly increased yield; cleanly cultivated plots yielded significantly more than plots treated with basamaize, propachlor, or bladex
REFERENCE: Greig, J.K. and M. Asif, "Effects of Herbicides on Yield, Weed Control, and Nutrient Content of Sweet Corn", Proc. N. Centr. Weed Contr. Conf. 26:99-101 (1971).

<3456>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 1.12 and 1.68 kg/ha
APPLICATION METHODS: Preplanting incorporated and preemergence treatments in spray volume of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: 1.12 kg/ha preplanting gave 75% weed control; 1.68 kg/ha preemergence gave 90% weed control
COMMENTS: Preemergence application more effective than preplanting incorporated treatment; observations made 25 days after treatment
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<3457>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 1.0 to 3.0 lb/A
APPLICATION METHODS: Preemergence applications principally, but some postemergence applications (alachlor, cyprazine, and cyanazine); 60 gal/A; 40 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1970 to 1972
EFFECTS: Moderate control of grass weeds except yellow foxtail (effective control); preemergence applications more effective than postemergence
COMMENTS: Preemergence herbicides which controlled large crabgrass also controlled fall panicum; these included: alachlor, linuron, cyanazine and prynachlor; herbicides which did not control large crabgrass and fall panicum included atrazine, cyprazine and dicamba
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

<3458>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A; EC
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: Moderate to effective control of weeds in pre- and postemergence applications with no adverse effect on corn
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D

<3458> CONT.
gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<3459>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Broadleaf weeds; Grasses; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0, 3.0, and 4.0 lb/A; WP
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Sassafras loam
EFFECTS: Moderate control of grass weeds and effective control of broadleafs with no adverse effect on corn
COMMENTS: Effective combinations were alachlor + atrazine, prynachlor + atrazine, chlorbromuron + atrazine, and chlorbromuron + simazine; atrazine slightly more effective than simazine
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

<3460>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Preemergence and postemergence applications; EC and oil additive formulation; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (5-10-10) and diazinon (4.0 lb/A) applied before disking
EFFECTS: Effective weed control at all application rates with no or little damage to corn
COMMENTS: Combination preemergence or postemergence treatments about as effective as herbicides alone
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<3461>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Panicum, fall (PANICUM DICHOTOMIFLORUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold sandy loam; evaluation time--approx. 2 mos; corn harvested at maturity for yield data
EFFECTS: Effective control of lambsquarters; moderate control of all other weeds; little or no effect on most corn varieties although reduced yield of seneca
COMMENTS: Seneca Chief most susceptible variety to yield reductions particularly from poorer herbicide treatments; all varieties showed injury from metribuzin; the best herbicide treatment was alachlor + MC 4379 80W
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "The Response of Several Sweet Corn Varieties to Various Herbicides and Herbicide Combinations," Proc. Northeast. Weed Sci. Soc. 28:175-181 (1974).

<3462>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS); Ladysthumb (POLYGONUM PERSICARIA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.6, 1.1, and 2.2 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Plano silt loam; visual estimates of weeds; evaluation time--about 2 mos. (at harvest)
EFFECTS: Poor to moderate control of weeds at two low application rates; moderate to effective control of weeds at high (2.2 kg/ha) rate
COMMENTS: Of six herbicides evaluated, propachlor and a combination of dalapon and MCPB provided most effective control of annual weeds with least risk of pea crop injury
REFERENCE: Harvey, R.G., E.T. Gritton, and R.E. Doersch, "Effects of Selected Herbicides on Annual Weed Control and Production of Processing Peas," Agron. J. 64(1):812-815 (1972).

<3463>
<3463>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1500 ppm
APPLICATION METHODS: Postemergence Spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; evaluation time--up to 16 da at 2-day intervals
EFFECTS: Moderate chlorosis (reduced chlorophyll content) of leaves
COMMENTS: Chlorophyll a and b in the foliage of CYPERUS RONTUNDUS rapidly decreased on application of 1500 ppm of herbicides Bladex-D, Embutox-plus, 2,4,-D, and Tok E-25
REFERENCE: Misra, L. P., L. D. Kapoor, and R. S. Choudhri, "Effect of Herbicides on the Chlorophyll Content of Nutgrass (CYPERUS ROTUNDUS L.)" Photosynthetica 8(3):302-303 (1974).

<3464>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Grasses
EXPERIMENTAL DOSE: 3.4 kg/ha
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Field study; soil--Brookston clay loam; time period--1970 to 1972
EFFECTS: Slight to moderate control of grasses
COMMENTS: Triazine and urea herbicides reduced sucrose level of seedlings of barnyardgrass and yellow foxtail compared with their effectiveness in controlling these weeds by pre-emergence application to maize; in 2 years out of 3, a significant positive correlation obtained between sucrose content of the third leaf and number of these grasses on field plots 2 months after planting
REFERENCE: Marriage, P. B. and W. J. Saidak, "Control of Barnyardgrass and Yellow Foxtail by Herbicides in Relation to the Sucrose Content of the Seedling Leaves," Weed Res. 14(2):115-118 (1974).

<3465>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS); Cupgrass, hairy (SETARIA FABERI); Foxtail, robust purple (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.56, 1.12, and 2.24 kg/ha
APPLICATION METHODS: Soil addition; preplant spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; soil--Plano silt loam; temperature--26 C
EFFECTS: Calculated 50% effective dose was 0.28-1.12 kg/ha with high correlation between herbicidal effect (dry wt loss) and seed weight
COMMENTS: All four herbicides provided acceptable control for barnyardgrass, giant foxtail, green foxtail, robust-purple foxtail, and yellow foxtail; susceptibility of grasses to cyanazine and alachlor correlated with seed size; alachlor more effective in controlling green foxtail and hairy cupgrass when applied to the soil surface before emergence than when incorporated into soil prior to sowing
REFERENCE: Harvey, R.G., "Susceptibility of Seven Annual Grasses to Herbicides," Weed Res. 14(1):51-55 (1974).

<3466>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Tulip (TULIPA sp.); Narcissus; Plants
EXPERIMENTAL DOSE: 1.68 to 4.48 kg/ha
APPLICATION METHODS: Preemergence, postemergence, and split applications; 280, 340, or 570 l./ha at 2.1 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; time period--1973 and 1974
EFFECTS: Moderate to effective weed control with no adverse effect on crop plants
COMMENTS: Acceptable weed control achieved with pre-emergence, early post-emergence, and split applications; at optimum application timings there were no commercially unacceptable effects on crop growth, flower quality, or bulb yield
REFERENCE: Jones, R.G. and B.C. Haddow, "The Use of Cyanazine for the Control of Weeds in Narcissus and Tulip Crops," Proc. 12th. Br. Weed Cont. Conf. 2:633-640 (1974).

<3467>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS); Ladysthumb (POLYGONUM PERSICARIA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.6, 1.1, and 2.2 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Plano silt loam; visual estimates of weeds; evaluation time--about 2 mos. (at harvest)
EFFECTS: Poor to moderate control of weeds at two low application rates; moderate to effective control of weeds at high (2.2 kg/ha) rate
COMMENTS: Of six herbicides evaluated, propachlor and a combination of dalapon and MCPA provided most effective control of annual weeds with least risk of pea crop injury
REFERENCE: Harvey, R.G., E.T. Gritton, and R.E. Doersch, "Effects of Selected Herbicides on Annual Weed Control and Production of Processing Peas," Agron. J. 64(1):812-815 (1972).

<3468>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Soybean (GLYCINE MAX); Jimsomweed (DATURA STRAMONIUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Postdirected spray at 280.5 l./ha to lower 1/3 of soybean plant in 30 cm bands
EXPERIMENTAL CONDITIONS: Mattapex silt loam; randomized complete block design with 4 replications; jimsonweed 25 to 30 cm tall at application
EFFECTS: Commercially unacceptable jimsonweed control; good pigweed control
COMMENTS: No reported soybean injury
REFERENCE: Parochetti, J.V., "Postemergence and Postdirected Broadleaved Weed Control for Soybeans," Proc. Northeast. Weed Sci. Soc. 27:75-79 (1973).

<3469>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Hyacinth, water (EICHHORNIA HASTAEFOLIA)
EXPERIMENTAL DOSE: 4.94 and 12.35 l./ha
APPLICATION METHODS: Addition to water
EXPERIMENTAL CONDITIONS: Field study; evaluation time--2 and 6 wk
EFFECTS: Moderate control
COMMENTS: Complete control of water hyacinth obtained with diquat and paraquat with no further regeneration; partial control obtained with cyanazine and 2,4-D while TCA proved non-effective against water hyacinth
REFERENCE: Patro, G.K. and G.C. Tosh, "Studies on Control of Water Hyacinth (EICHHORNIA CRASSIPES) by Herbicides," Andhra Agric. J. 18(4):139-143 (1971).

<3470>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Corn (ZEA MAYS); Nutsedge, yellow (CYPERUS ESCULENTUS); Foxtail, giant (SETARIA FABERI); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplant incorporated (2-3 in.) spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Mattapex silt loam; time period--1974 and 1975
EFFECTS: Moderate to effective weed control with slight initial damage to corn but no adverse effect on yield
COMMENTS: Best control of weed species achieved with combination of materials; only RP-20630 and RP-15018, at high rates, caused corn injury and reduced yields
REFERENCE: Parochetti, J.V., G.W. Burt, and A.W. Bell, "Triazines, Acetanilides, and Several Other Herbicides for Weed Control in Corn," Proc. N.E. Weed Sci. Soc. 30:48-54 (1976).

<3471>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Plants; Lotus (LOTUS PEDUNCULATUS)
EXPERIMENTAL DOSE: 0.6, 1.1 and 1.7 kg/ha
APPLICATION METHODS: Preemergence spray; 560 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Tokomaru silt loam, time period--1974 and 1975
EFFECTS: Effective weed control but death of lotus
COMMENTS: Dinoseb most effective of 6 pre-emergence herbicides tested and 2,4-DB best of 5 postemergence herbicides; crop showed no tolerance towards atrazine, cyanazine, metribuzin, or bentazone
REFERENCE: Ivens, G.W., "Preliminary Evaluation of Pre- and Post-Emergence Herbicides in "Maku" Lotus," Proc. 28th. New Zealand Weed and Pest Cont. Conf. 28:31-34 (1975).

<3472>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Plants; Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.52 to 2.80 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; 450 l./ha at 4.45 kg/g cm pressure; split applications
EXPERIMENTAL CONDITIONS: Field studies; 10 sites; varied soils; time period--1971 and 1972
EFFECTS: At 1.75 kg/ha, effective weed control with no adverse effect on pea yield but early leaf damage
COMMENTS: Applying cyanazine pre-emergence followed by post-emergence gave better weed control than standards used under dry conditions in 1971 with adequate crop safety; at high rates of cyanazine in 1972, rainfall exerted greater influence on selectivity and to lesser extent on weed control than did soil type
REFERENCE: Morris, R.O., "Experiments to Investigate the Use of Cyanazine as a Herbicide on Light Soils at Successive Growth Stages of Peas Under Varying Rainfall Conditions," Proc. 11th. Br. Weed Cont. Conf. 2:565-572 (1972).

<3473>
<3473>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Pea, sweet (PISUM SATIVUM); Plants
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 or 50 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1971 and 1972
EFFECTS: Moderate to effective weed control generally with only slight initial chlorosis of pea
COMMENTS: Cyanazine did not cause serious crop damage, except on a free-draining soil where leaching occurred, but knotgrass not adequately controlled
REFERENCE: King, J.M. and R.P. Handley, "Post-Emergence Herbicide Experiments in Peas and Dwarf Beans," Proc. 11th. Br. Weed Cont. Conf. 11(2):539-546 (1972).

<3474>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS); Ladysthumb (POLYGONUM PERSICARIA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.6, 1.1, and 2.2 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Plano silt loam; visual estimates of weeds; evaluation time--about 2 mos. (at harvest)
EFFECTS: Poor to moderate control of weeds at two low application rates; moderate to effective control of weeds at high (2.2 kg/ha) rate
COMMENTS: Of six herbicides evaluated, propachlor and a combination of delapon and MCPB provided most effective control of annual weeds with least risk of pea crop injury
REFERENCE: Harvey, R.G., E.T. Gritton, and R.E. Doersch, "Effects of Selected Herbicides on Annual Weed Control and Production of Processing Peas," Agron. J. 64(1):812-815 (1972).

<3475>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.0, 2.0, 3.0, and 4.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Freehold sandy loam
EFFECTS: Effective control of broadleafs and moderate control of grasses at all rates with no adverse effects on corn yield
COMMENTS: Combinations of alachlor and atrazine, alachlor and simazine, and alachlor and cyanazine resulted in better control of fall panicum than single treatments of atrazine, simazine, or cyanazine; best overall control obtained with alachlor
REFERENCE: Herman, D.J. and R.D. Ilnicki, "Weed Control in Corn by Alachlor and Prynachlor in Combination with Some S-Triazine Herbicides," Proc. Northeast. Weed Sci. Soc. 27:41-46 (1973).

<3476>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 2.0 and 2.5 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Effective control of lambsquarters and pigweed and moderate control of velvetleaf and panicum with slight adverse effect on corn
COMMENTS: Penoxalin in combination with atrazine improved control of velvetleaf; control of lambsquarters and pigweed only slightly better than either herbicide applied alone; penoxalin in combination with cyanazine greatly improved control of lambsquarters, velvetleaf, and panicum with no appreciable increase in control of pigweed
REFERENCE: Ilnicki, R.D. and R.W. Michieka, "Penoxalin Alone and in Combination with Atrazine, Cyanazine, and RH-5205 for Weed Control in Corn," Proc. Northeast. Weed Sci. Soc. 31:6-10 (1977).

<3477>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 1.7 kg/ha
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Moderate control of weeds and no adverse effect on peanuts
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit futher testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<3478>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]-amino]-2-methyl-
CHEMICAL COMMON NAME: Cyanazine
PLANT: Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed, prostrate (AMARANTHUS BLITOIDES); Mustard, wild (BRASSICA KABER); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Witchgrass, old- (PANICUM CAPILLARE); Foxtail, yellow (SETARIA GLAUCA); Foxtail, giant (SETARIA FABERI)
EXPERIMENTAL DOSE: 1.8 to 3.6 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--medium textured; two locations (NY and MD)
EFFECTS: At 2.7 kg/ha or less, effective control of all broadleaf weeds and grasses except the foxtails
COMMENTS: Procyazine and cyanazine gave good control of most annual grass and broadleaf weeds; 3:1 ratio of procyazine + atrazine increased weed control spectrum over procyazine was used alone
REFERENCE: Higgins, E.R., M.G. Schnappinger, and S.W. Pruss, "Procyazine for Annual Grass and Broadleaf Control in Corn," Proc. Northeast. Weed Sci. Soc. 29:63-67 (1975).

<3479>
CHEMICAL NAME: Propanenitrile, 2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]amino]-2-methyl-
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Meadowgrass, rough stalked (POA TRIVIALIS); Timothy (PHLEUM PRATENSE); Fescue, tall (FESTUCA ARUNDINACEA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Ryegrass, perennial (LOLIUM PERENNE); Fescue, meadow (FESTUCA ELATIOR); Cocksfoot
EXPERIMENTAL DOSE: 16, 24, 32, and 48 oz/A
APPLICATION METHODS: Preplanting, preemergence, and postemergence sprays
EXPERIMENTAL CONDITIONS: Clay or heavy clay soils; 1966-67 and 1967-78 main trials, wet weather hampered 1966-67 trial thus study emphasis on 1967-68 trial; spraying dates of 8/22/67, 9/22/67, 1/4/68, 3/4/68, and 3/5/68; 2 to 3 replicates; average for all crop grasses reported
EFFECTS: Crop tolerance--excellent tolerance at 11 and 35 wk with 16 and 24 oz/A, respectively, moderate tolerance at 11 wk with 32 oz/A, good tolerance at 35 wk with 48 oz/A; A. MYOSUROIDES--poor preplanting control, poor to good preemergence control (Variable results), poor control at 1 leaf stage, no control when well tillered; P. TRIVIALIS--good preemergence control (16 oz/A), excellent control at 1 leaf stage (32 oz/A), moderate control when well tillered (48 oz/A)
COMMENTS: Crop grasses sown 7/5/67, weed grasses sown 8/21/67, 9/18/67, and 2/29/68
REFERENCE: Shildrick, J.P. and T.J. Arthur, "Control of ALOPECURUS MYOSUROIDES (Blackgrass) and POA TRIVIALIS (Routh-stalked Meadow Grass) in Grass Seed Crops by Herbicides," Nat. Inst. Agric. Bot. (Cambridge) Rep. Acc. 11(2):361-369 (1968).

<3480>
CHEMICAL NAME: Propanoic acid, 1-chloro-
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<3481>
CHEMICAL NAME: Propanoic acid, 2-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DP
PLANT: Pea, cow- (VIGNA SINENSIS)
EXPERIMENTAL DOSE: 1X10(-4)M
APPLICATION METHODS: Solution addition to isolated mitochondria
EXPERIMENTAL CONDITIONS: Laboratory study; isolated mitochondria from germinating seed
EFFECTS: Inhibited mitochondrial respiration
COMMENTS: ADP or ATP reversed inhibition of respiration caused by DNP
REFERENCE: da Guia, M., S. Lima, and P. A. Pinheiro, "Effect of 2,4 Dinitrophenol on Mitochondria of VIGNA SINENSIS ev. Serido," Biochimie 57(11-12):1401-1403 (1975).

<3482>
CHEMICAL NAME: Propanoic acid, 2-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: Dichlorprop
PLANT: Oak, Gambel (Quercus sp.); Serviceberry, Saskatoon (AMELANCHIER ALNIFLORA); Snowberry, roundleaf (SYMPHORICARPUS ROTUNDIFOLIUS); Squaw-apple (PERAPHYLLUM RAMOSISSIMUM); Sagebrush, big (ARTEMISIA TRIDENTATA)
EXPERIMENTAL DOSE: 3.4 lb/A
APPLICATION METHODS: Aerial spray to foliage; 5.5 l./ha; repeat applications after 2 or 3 yr
EXPERIMENTAL CONDITIONS: Field study; time period -- 1968 to 1972; 2 locations in Colorado; brush control
EFFECTS: Moderate control of most brush (canopy reduction)
COMMENTS: July application superior to August application; repeat sprays after two years better than after three years; all herbicides gave similar control of Gambel oak, but silvex and dichlorprop less effective on Saskatoon serviceberry, roundleaf snowberry, and squaw-apple than 2,4,5-T or a mixture of 2,4-D and dichlorprop
REFERENCE: Johnson, R.R., "Improving Forage Production and Big Game Winter Range With Phenoxy Herbicides," Proc. West. Soc. Weed Sci. 28:40-43 (1975).

<3483>
<3483>
CHEMICAL NAME: Propanoic acid, 2-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: Dichlorprop
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3484>
CHEMICAL NAME: Propanoic acid, 2-(2,4-dichlorophenoxy)-
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 1.0, 2.5, and 5.0X10(-3)M (3 ml/plant)
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Death of proximal root sections at 2.5 and 5.0 X 10(-3)M with reduced effects for other more distal root sections
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

<3485>
CHEMICAL NAME: Propanoic acid, 2-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: 2,4-DP
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 2.0 to 6.0 lb/A; butoxyethanol ester
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Moderate kill
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<3486>
CHEMICAL NAME: Propanoic acid, 2-(2,4-dichlorophenoxy)-
CHEMICAL COMMON NAME: Dichlorprop
PLANT: Dock, broad-leaf (RUMEX OBTUSIFOLIUS); Dock, curly (RUMEX CRISPUS)
EXPERIMENTAL DOSE: 2.5 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; established grasslands; time period--1970-1972; 12 sites; applied in varied combinations and schedules; G less effective
EFFECTS: Moderate control of docks but less effective than dicamba
COMMENTS: No herbicide achieved total control; double spraying of dicamba particularly effective but at exorbitant cost for farm-scale use; next best control attained by dicamba-based herbicides sprayed in May successively for two years
REFERENCE: Frame, J. and R.D. Harkness, "Herbicides for Control of Docks (RUMEX spp.) in Grassland," Proc. 11th. Br. Weed Cont. Conf. 11(1):323-330 (1972).

<3487>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: Parsley-piert (ALCHEMILLA MICROCORPA);Henbit (LAMIUM AMPLEXICAULE);Chickweed, common (STELLARIA MEDIA);Speedwell, corn (VERONICA ARVENSIS);Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 1.1 and 2.2 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l./ha; surfactant--0.5%
EXPERIMENTAL CONDITIONS: Field study; 3 locations in GA; time period--1972-1974; evaluation time--42 to 85 days; bermudagrass dormant when sprayed
EFFECTS: Moderate to effective control of all weeds at higher rate with same variability and no adverse effect on bermudagrass
COMMENTS: Herbicides controlled all weed species with single application; herbicides had less activity on parsley-piert and corn speedwell than on henbit and common chickweed; single applications of either cisanilide or methazole gave excellent parsley-piert controll; paraquat satisfactorily controlled more weed species with a single application than any other herbicide treatment
REFERENCE: Johnson, B.J., "Broadleaf Weed Control in Dormant Bermudagrass Turf," Agron. J. 67(1):689-692 (1975).

<3488>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: Oak, Gambel (Quercus sp.); Serviceberry, Saskatoon (AMELANCHIER ALNIFLORA); Snowberry, roundleaf (SYMPHORICARPUS ROTUNDIFOLIUS); Squaw-apple (PERAPHYLLUM RAMOSISSIMUM); Sagebrush, big (ARTEMISIA TRIDENTATA)
EXPERIMENTAL DOSE: 2.2 lb/A; diesel oil diluent
APPLICATION METHODS: Aerial spray to foliage; 5.5 l./ha; repeat applications after 2 or 3 yr
EXPERIMENTAL CONDITIONS: Field study; time period -- 1968 to 1972; 2 locations in Colorado; brush control
EFFECTS: Slight to moderate canopy reduction
COMMENTS: July application superior to August application; repeat sprays after two years better than after three years; all herbicides gave similar control of Gambel oak, but silvex and dichlorprop less effective on Saskatoon serviceberry, roundleaf snowberry, and squaw-apple than 2,4,5-T or a mixture of 2,4-D and dichlorprop
REFERENCE: Johnson, R.R., "Improving Forage Production and Big Game Winter Range With Phenoxy Herbicides," Proc. West. Soc. Weed Sci. 28:40-43 (1975).

<3489>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: Orchard grass (DACTYLIS GLOMERATA); Fescue, creeping red (FESTUCA RUBRA); Timothy (PHLEUM PRATENSE); Bentgrass (AGROSTIS sp.); Plants
EXPERIMENTAL DOSE: 2.0 lb/A; ester
APPLICATION METHODS: Postemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Puget silt loam
EFFECTS: Reduced seed yield of orchardgrass and red fescue but no adverse effect on seed yield of timothy and bentgrass; effective weed control
COMMENTS: Orchardgrass seed yields, significantly decreased by 2,4-D (acid) and silvex (yields from these plots did not differ significantly); silvex and 2,4,5-T ester applications in red fescue plantings significantly decreased seed yield compared to 2,4-D acid and MCPA applications; silvex applications resulted in significantly lower yield of red fescue seed
REFERENCE: Peabody, D.V. and H.M. Austenson, "Herbicides and Their Effect on the Yield of Grass Seed," Agron. J. 57(1):633-634 (1965).

<3490>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Fenoprop
PLANT: Grasses; Broadleaf weeds; Nutsedge, purple (CYPERUS ROTUNDUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 1 kg/ha
APPLICATION METHODS: Formulation--400 g/l.; applied during dry season 7 days after crop emergence
EXPERIMENTAL CONDITIONS: Clay loam (pH 5.8, organic matter 2.6%); dry and wet season treatments; randomized block design with 3 replications; 3 by 5 sq. m plots; nitrogen applied as ammonium sulphate at rate of 120 kg/ha
EFFECTS: Minor rice toxicity; poor weed control
COMMENTS: Herbicide combinations also tested
REFERENCE: Okafor, L.I. and S.K. De Datta, "Chemical Control of Perennial Nutsedge (CYPERUS ROTUNDUS) in Tropical Upland Rice," Weed. Res. 16(1):1-5 (1976).

<3491>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: Horehound (MARRUBIUM VULGARE)
EXPERIMENTAL DOSE: 2.0 and 4.5 lb/A; ester
APPLICATION METHODS: Postemergence spray; 25 gal/A
EXPERIMENTAL CONDITIONS: Field study; evaluation time--2.5 and 12 mos
EFFECTS: Effective control for 12 mos
COMMENTS: Control of horehound plants possible with both 2,4-D and silvex
REFERENCE: Stritzke, J. F., "Germination Characteristics and Chemical Control of Horehound," J. Range Manag. 28(3):225-226 (1975).

<3492>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: Yucca (YUCCA GLAUCA)
EXPERIMENTAL DOSE: 1.0 to 4.0 lb/A; EC; propylene glycol butylether ester
APPLICATION METHODS: Aerial spray
EXPERIMENTAL CONDITIONS: Field study; soil--dune sand
EFFECTS: Effective control of yucca at 2.0 and 4.0 lb rates
COMMENTS: Yucca control by aircraft applications revealed silvex gave best yucca kill from single application of all herbicides, carriers, and spray volumes used; substantial amount of yucca regrowth found in all plots two years following treatment indicating retreatment necessary for best control
REFERENCE: Bovey, R.W., "Control of Yucca by Aerial Application of Herbicides," J. Range Manag. 17:194-196 (1964).

<3493>
<3493>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.1 lb/A; PGBE ester
APPLICATION METHODS: Postemergence spray; 20, 40, and 60 gal/A at 20, 40, and 60 psi
EXPERIMENTAL CONDITIONS: Field study; volatility and drift studied
EFFECTS: Reduced soybean and cotton yield
COMMENTS: PBA, 2,3,6-TBA, and fenac sprays applied safely for eradication of perennial weeds in and near cotton; use of these herbicides near soybeans hazardous because very small quantities caused leaf deformities and some loss in seed yield
REFERENCE: Wiese, A.F. and A.G. Martin, "Toxicity of Benzoic Acid Herbicides to Cotton and Soybeans," Weeds 11(1):7-10 (1963).

<3494>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: Alligatorweed
EXPERIMENTAL DOSE: 5.0 and 20.0 lb/A; EC and ester
APPLICATION METHODS: Addition by syringe to water containing test species (submersed species) and spray (100 gal/A at 20 psi)
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--80 F; light intensity--60 to 80 ft c; photoperiod--10 hr; evaluation time--2 to 8 wk with continuous and varied (0.5 to 336 hr) contact
EFFECTS: Effective weed control at 20.0 lb/A for 8 wk; EC formulation more active than ester
COMMENTS: Among 75 herbicides evaluated on three species of submersed weeds only diquat, endothal, and acrolein gave 85% or better control at 1 ppmw in still-water tests; only acrolein and endothal effective on submersed weeds at 1 ppmw in limited-exposure test; evaluation of 17 herbicides on three species of floating aquatic weeds indicated diquat effective
REFERENCE: Blackburn, R.D., "Evaluating Herbicides Against Aquatic Weeds," Weeds 11(1):21-24 (1963).

<3495>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 2.0 to 10.0 lb/A; propylene glycol and butyl ether esters
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Killed at 75. lb/A
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most common phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<3496>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: Rabbitbrush, green (CHRYSOTHAMNUS VISICIDIFLORUS); Rabbitbrush, grey (CHRYSOTHAMNUS NAUSEOSUS)
EXPERIMENTAL DOSE: 3.0 lb/A; butoxyethanol
APPLICATION METHODS: Foliar spray; 30 psi; 5.0 to 10.9 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1950 to 1955
EFFECTS: Slight to moderate control of both species
COMMENTS: Green and grey rabbitbrush more susceptible to 2,4-D esters than to any of other herbicides used; with 2,4-D esters, an acid equivalent rate of 3 lb/A gave good rabbitbrush control
REFERENCE: Hyder, D.N., F.A. Sneva, D.O. Chilcote, and W.R. Furtick, "Chemical Control of Rabbitbrush with Emphasis Upon Simultaneous Control of Big Sagebrush," Weeds 6(3):289-297 (1958).

<3497>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: Effective initial control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<3498>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: Alligatorweed
EXPERIMENTAL DOSE: 20, 30, and 40 lb/A; G; K salt and 2-ethylhexyl ester
APPLICATION METHODS: Broadcast with "cyclone" spreader
EXPERIMENTAL CONDITIONS: Lake study; time period--1961 and 1962; single applications made at varied times (May through July)
EFFECTS: Effective control at 30 lb/A when water at 1.5 foot depth or less; no control when water was 3 to 5

<3498> CONT.
ft deep; ester formulation more effective than K salt
COMMENTS: Silvex gave excellent control of well-rooted alligatorweed growing in less than 18 inches of water; 2-ethylhexyl ester of silvex more effective than potassium salt; Silvex not effective on floating-mat alligatorweed or in water over 18 inches deep
REFERENCE: McGilvrey, F.B. and J.H. Steenis, "Control of Alligatorweed in South Carolina With Granular Silvex," Weeds 13(1):66-68 (1965).

<3499>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: Clover, white (TRIFOLIUM REPENS); Chickweed, mouse-ear (CERASTIUM VISCOSUM); Dandelion, common (TARAXACUM OFFICINALE)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Foliar spray; 50 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1974 and 1975; soil--Bridgehampton silt loam
EFFECTS: At 0.5 lb/A, effective weed control except for dandelion (moderate control)
COMMENTS: Variable control of dandelion observed with all applications of 2,4-D; combinations of 2,4-D with one or more herbicides -- dicamba, mecoprop or silvex -- provided good broad spectrum control and in certain cases greater than 90 percent control; a newer material RO-7-6145 gave good control of chickweed and dandelion; PP-831 provided better than 90 percent control of clover and chickweed
REFERENCE: Jagschitz, J.A. and L.H. Barrett, "Chemical Control of Broadleaved Weeds in Cool Season Turfgrasses," Proc. N.E. Weed Sci. Soc. 30:385-388 (1976).

<3500>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: Bahiagrass (PASPALUM NOTATUM); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1.5 to 6.0 lb/A; propylene glycol butyl ether ester
APPLICATION METHODS: Foliar spray; 20 to 36.6 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; soils--Lakeland fine and coarse sand and Kanapaha fine sand; results in greenhouse and field similar; time period--1956 and 1957
EFFECTS: No or slight damage of mature bahiagrass with effective weed control thus allowing turf establishment
COMMENTS: Oil soluble 2,3,6-TBA killed all bahiagrass seedlings under greenhouse conditions; same treatments, applied to seedlings in field, killed a high percentage but not all plants; carrier consisting partially or entirely of diesel oil for other herbicidl treatments caused more severe damage to seedlings than water carrier for comparable treatments
REFERENCE: Black, C.C. and E.G. Rodgers, "Response of Pensacola Bahiagrass to Herbicides," Weeds 8(1):72-77 (1960).

<3501>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Silvex
PLANT: Aster, blue wood (ASTER CORDIFOLIUS); Bindweed, field (CONVOLVULUS ARVENSIS); Bindweed, hedge (CONVOLVULUS SEPIUM); Carrot, wild (DAUCUS CAROTA); Chickweed, common (STELLARIA MEDIA); Chickweed, mouse-ear (CERASTIUM VULGATUM); Clover (TRIFOLIUM sp.); Copperleaf, Virginia (ACALYPHA VIRGINICA); Daisy, oxeye (CHRYSANTHEMUM LEUCANTHEMUM); Dandelion (TARAXACUM OFFICINALE); Dock, broad-leaf (RUMEX OBTUSIFOLIUS); Dogbane, hemp (APOCYANUM CANNABINUM); Fleabane, annual (ERIGERON ANNUS); Horsenettle (SOLANUM CAROLINENSE); Ironweed (VERONICA ALTISSIMA); Poison ivy (RHUS RADICANS); Ladysthumb (POLYGONUM PERSICARIA); Onion, wild (ALLIUM sp.); Plantain, broad-leaf (PLANTAGO MAJOR); Plantain, buckhorn (PLANTAGO LANCEOLATA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Sorrell, red (RUMEX ACETOSELLA); Spanish needles (BIDENS BIPINNATA); Vetch, common (VICIA SATIVA); Violet (VIOLA sp.); Sorrell, wood (OXALIS STRICTA); Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 4.48 and 22.4 kg/ha; ester and amine
APPLICATION METHODS: Postemergence spray; 1870 l./ha (low rate) and 9350 l./ha (high rate); applied to ground cover and soil beneath apple trees
EXPERIMENTAL CONDITIONS: Field study; annual applications over 6 yr period (1957 throug 1962)
EFFECTS: Slight to effective control of broadleaf weeds with little or no control of grass weeds and no adverse effect on apple
COMMENTS: Single applications 2,4,5-T ester, 2,4,5-T amine, and silvex to ground cover and soil under apple trees significantly reduced proportion of broadleaf plants to grasses; after six annual applications, ground cover consisted of almost pure stands of grasses; six applications of dinoseb + oil decreased proportion of broadleaf weeds to grasses; one application did not change proportion; one and six annual applications of dinoseb amine significantly reduced broadleaf weeds
REFERENCE: Schubert, O.E., "Plant Cover Changes Following Herbicide Applications in Orchards," Weed Sci. 20(1):124-127 (1972).

<3502>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
CHEMICAL COMMON NAME: Fenoprop
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 6.20 and 5.70 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as

<3502>
<3502> CONT.
root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<3503>
CHEMICAL NAME: Propanoic acid, 2-(2,4,5-trichlorophenoxy)-, S-naphthylmethyl isothiourea salt
CHEMICAL COMMON NAME: Silvex, s-naphthylmethyl isothiourea salt
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: Effective initial control at 20.0 lb rate
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<3504>
CHEMICAL NAME: Propanoic acid, 2-(4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: Mecoprop
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3505>
CHEMICAL NAME: Propanoic acid, 2-(4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: Mecoprop
PLANT: Grasses; Broadleaf weeds; Nutsedge, purple (CYPERUS ROTUNDUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 1.5 kg/ha
APPLICATION METHODS: Formulation--560 g/l.; applied during dry season 14 days after crop emergence
EXPERIMENTAL CONDITIONS: Clay loam (pH 5.8, organic matter 2.6%); dry and wet season treatments; randomized block design with 3 replications; 3 by 5 sq. m plots; nitrogen applied as ammonium sulphate at rate of 120 kg/ha
EFFECTS: Moderate rice toxicity; poor grass and broadleaf weed control, fair nutsedge control
COMMENTS: Herbicide combinations also tested
REFERENCE: Okafor, L.I. and S.K. De Datta, "Chemical Control of Perennial Nutsedge (CYPERUS ROTUNDUS) in Tropical Upland Rice," Weed. Res. 16(1):1-5 (1976).

<3506>
CHEMICAL NAME: Propanoic acid, 2-(4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPP
PLANT: Periwinkle, common (VINCA MINOR); St. John's-wort (HYPERICUM CALYCINUM); (DELASPERMA ALBA); (GAZANIA SPLENDENS); Ivy (HEDERA CANARIENSIS); Ivy, English (HEDERA HELIX); Iceplant (CARPOBROTUS EDULE); Stonecrop (SEDUM BREVIFOLIUM); Bugleweed (AJUGA REPENS)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Postemergence application using a knapsack sprayer at a pressure of 30 psi
EXPERIMENTAL CONDITIONS: Field experiments; July 26 applications--injury evaluations made September 1, September 30 and October 22 of the same year; each treatment replicated 4 times
EFFECTS: V. MINOR--no injury; H. CALYCINUM--minor injury; D. ALBA--tip dieback and growth malformation; G. SPLENDENS--minor injury; H. CANARIENSIS--no injury; H. HELIX--no injury; C. EDULE--growth distortion; S. BREVIFOLIUM--very minor injury; A. REPENS--distortion and chlorosis for 7 wks
REFERENCE: Elmore, C.L., W.D. Hamilton, E. Johnson, and T. Kretchun, "Ground Cover Species Tolerance to Herbicide Applications," Calif. Agric. 26(3):3-4 (1972).

<3507>
CHEMICAL NAME: Propanoic acid, 2-(4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: MCPP
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 2.0 to 10.0 lb/A; potassium salt
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Killed at 4.0 lb/A
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most common phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<3508>
CHEMICAL NAME: Propanoic acid, 2-(4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: Mecoprop
PLANT: Dock, broad-leaf (RUMEX OBTUSIFOLIUS); Dock, curly (RUMEX CRISPUS)
EXPERIMENTAL DOSE: 3.0 and 4.5 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; established grasslands; time period--1970-1972; 12 sites; applied in varied combinations and schedules; G less effective
EFFECTS: Moderate control of docks but less effective than dicamba
COMMENTS: No herbicide achieved total control; double spraying of dicamba particularly effective but at exorbitant cost for farm-scale use; next best control attained by dicamba-based herbicides sprayed in May successively for two years
REFERENCE: Frame, J. and R.D. Harkness, "Herbicides for Control of Docks (RUMEX spp.) in Grassland," Proc. 11th. Br. Weed Cont. Conf. 11(1):323-330 (1972).

<3509>
CHEMICAL NAME: Propanoic acid, 2-(4-chloro-2-methylphenoxy)-
CHEMICAL COMMON NAME: Mecoprop
PLANT: Clover, white (TRIFOLIUM REPENS); Chickweed, mouse-ear (CERASTIUM VISCOSUM); Dandelion, common (TARAXACUM OFFICINALE)
EXPERIMENTAL DOSE: 1.0 lb/A; amine
APPLICATION METHODS: Foliar spray; 50 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1974 and 1975; soil--Bridgehampton silt loam
EFFECTS: Effective weed control except for dandelion (slight control)
COMMENTS: Variable control of dandelion observed with all applications of 2,4-D; combinations of 2,4-D with one or more herbicides -- dicamba, mecoprop or silvex -- provided good broad spectrum control and in certain cases greater than 90 percent control; a newer material BO-7-6145 gave good control of chickweed and dandelion; PP-831 provided better than 90 percent control of clover and chickweed
REFERENCE: Jagschitz, J.A. and L.H. Barrett, "Chemical Control of Broadleaved Weeds in Cool Season Turfgrasses," Proc. N.E. Weed Sci. Soc. 30:385-388 (1976).

<3510>
CHEMICAL NAME: Propanoic acid, 2-[4-(2,4-dichlorophenoxy)phenoxy]-, methyl ester
CHEMICAL COMMON NAME: IMC-3950
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 3.00 and 6.00 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: In 6.0 kg/ha preemergence application, weeds were controlled (killed) but there was unspecified phytotoxic effects on crop beans
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<3511>
CHEMICAL NAME: Propanoic acid, 2-[4-(2,4-dichlorophenoxy)phenoxy]-, methyl ester
CHEMICAL COMMON NAME: HOE 23408
PLANT: Soybean (GLYCINE MAX); Corn (ZEA MAYS); Foxtail, giant (SETARIA FABERI)
EXPERIMENTAL DOSE: 0.84-3.36 kg/ha
APPLICATION METHODS: Postemergence spray; aqueous carrier--187 l. /ha; EC formulation
EXPERIMENTAL CONDITIONS: Field study; silt loam soil (4.5% organic matter); preemergence application of trifluralin on weed-free (control) plots; cultivation (2X) and hand weeding as required; time--3 wk
EFFECTS: Effective control of corn and giant foxtail in soybean crop at 0.84-1.68 kg/ha depending on weed seedling stage; HOE 22870 caused no soybean damage; HOE 23408 caused slight leaf chlorosis and necrosis
COMMENTS: Bentazon used successfully in combination with little apparent effect on soybean seed yield at application rate of 3.36 kg/ha; susceptibility of 32 wired corn strains varied
REFERENCE: Anderson, R.N., "Control of Volunteer Corn and Giant Foxtail in Soybeans," Weed Sci. 24(3):253-256 (1976).

<3512>
<3512>
CHEMICAL NAME: Propanoic acid, 2-[4-(2,4-dichlorophenoxy)phenoxy]-, methyl ester
CHEMICAL COMMON NAME: HOE 23408
PLANT: Goosegrass (ELEUSINE INDICA); Spangletop, red (LEPTOCHLOA FILIFORMIS); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS); Foxtail, giant (SETARIA FABERI); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Crabgrass, hairy (DIGITARIA SANGUINALIS); Signalgrass, broadleaf (BRACHIARIA PLATYPHYLLA); Oat, wild (AVENA FATUA); Johnson grass (SORGHUM HALEPENSE); Panicum, Texas (PANICUM TEXANUM); Cheat (BROMUS SECALINUS); Goatgrass, jointed (AEGILOPS CYLINDRICA); Sorghum (SORGHUM BICOLOR); Oat (AVENA SATIVA); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Wheat (TRITICUM AESTIVUM); Cotton (GOSSYPIUM HIRSUTUM); Peanut (ARACHIS HYPOGAEA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.001 to 5.0 ppmw; 1.68 kg/ha
APPLICATION METHODS: Addition to soil; preplant incorporation; preemergence spray; postemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; soil--Teller sandy loam, pH--57; styrofoam cup and flat culture in greenhouse; light intensity--7613 klux, RH--40 to 60%, and temperature--20 to 28 C
EFFECTS: In general, 50% growth reduction of weeds at 0.001 to 0.54 ppmw (except goatgrass at 4.89 ppmw) in preplant incorporation; 50% reduction at 0.10 to 1.63 ppmw in preemergence; 50% reduction at 0.001 to 1.91 ppmw in postemergence; see comments
COMMENTS: Order of susceptibility of 13 seedling grassy weeds constant, whether the herbicide applied preplant incorporated, preemergence, or postemergence; herbicide most phytotoxic when applied preplant incorporated or early postemergence; grain sorghum and oats moderately susceptible to HOE 23408, whereas barley exhibited marginal tolerance; wheat and cotton showed tolerance to HOE 23408 at rates up to 6 ppmw; soybean and peanut demonstrated tolerance to concentrations as high as 24 ppmw
REFERENCE: Wu, C. and P.W. Santelmann, "Phytotoxicity and Soil Activity of HOE 23408," Weed Sci. 24(6):601-604 (1976).

<3513>
CHEMICAL NAME: Propanoic acid, 2-[4-(2,4-dichlorophenoxy)phenoxy]-, methyl ester
CHEMICAL COMMON NAME: HOE-23408
PLANT: Fescue, creeping red (FESTUCA RUBRA); Bluegrass, Kentucky (POA PRATENSIS); Crabgrass (DIGITARIA ISCHAEMUM); Bentgrass, Rhode Island (AGROSTIS TENUIS)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Spray application in water at rate of 172 gpa; 2 July applications of 2 lb/A, 1 July application at 4 lb/A
EXPERIMENTAL CONDITIONS: 4 x 5 ft plots with 3 replications; turfgrass injury assessed in July, August, and September; crabgrass control assessed in September
EFFECTS: Minor turfgrass injury noted; 69% crabgrass control at 2 lb/A, 89% at 4 lb/A
COMMENTS: Potential for crabgrass control, turfgrass injury may limit usefulness
REFERENCE: Jagschitz, J.A., "Postemergence Crabgrass and Nutsedge Control in Turfgrass with Herbicides," Proc. Northeast. Weed Sci. Soc. 29:376-381 (1975).

<3514>
CHEMICAL NAME: Propanoic acid, 2-[4-(2,4-dichlorophenoxy)phenoxy]-, methyl ester
CHEMICAL COMMON NAME: HOE 23408
PLANT: Oat, wild (AVENA FATUA); Foxtail, green (SETARIA VIRIDIS); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.84, 1.12, 1.40 and 1.68 kg/ha
APPLICATION METHODS: Formulation--36% active ingredient; application in 100 l./ha water
EXPERIMENTAL CONDITIONS: Ponoka loam soil, pH 6.6; wheat and barley planted as crops, other plants sown as weeds; treatments applied to wild oats at the 2, 4, and 5-leaf stages
EFFECTS: All rates gave good control of foxtail and wild oats except for 0.84 and 1.12 kg/ha applied to the 5-leaf stage of wild oat which gave moderate control; no injury to wheat at any rate; minor injury to barley at all rates except 0.84 kg/ha
COMMENTS: Great potential for green foxtail and wild oat control in wheat and with formulation modification, in barley; herbicide possibly inactivated by dry soil; activity of soil applied HOE 23408 apparently greater from shoot than root contact; minimal leaching; no explanation for difference in tolerance between wheat and barley
REFERENCE: Friesen, H.A., P.A. O'Sullivan, and W.H. Vanden Born, "HOE 23408, A New Selective Herbicide For Wild Oats and Green Foxtail in Wheat and Barley," Can. J. Plant Sci. 56(3):567-578 (1976).

<3515>
CHEMICAL NAME: Propanoic acid, 2-[4-(2,4-dichlorophenoxy)phenoxy]-, methyl ester
CHEMICAL COMMON NAME: HOE-23408
PLANT: Soybean (GLYCINE MAX); Corn (ZEA MAYS); Foxtail, giant (SETARIA FABERI)
EXPERIMENTAL DOSE: 0.84 and 1.68 kg/ha; EC
APPLICATION METHODS: Postemergence spray; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--silt loam; time period--1973 and 1974; greenhouse study on corn inbreds
EFFECTS: Effective control of foxtail and corn at 1.68 kg/ha with slight injury to soybean but no adverse effect on yield
COMMENTS: HOE-22870 or HOE-23408 controlled corn and giant foxtail; soybeans tolerated of either herbicide; both herbicides performed quite similarly, but HOE 22870 generally more effective on giant foxtail and less effective on corn than HOE 23408
REFERENCE: Andersen, R.N., "Control of Volunteer Corn and Giant Foxtail in Soybeans," Weed Sci. 24(3):257-260 (1976).

<3516>
CHEMICAL NAME: Propanoic acid, 2-[4-(2,4-dichlorophenoxy)phenoxy]-, methyl ester
CHEMICAL COMMON NAME: IMC-3950
PLANT: Junglerice (ECHINOCHLOA COLONUM); Spangletop, bearded, (LEPTOCHLOA FASCICULARIS); Nutsedge, yellow (CYPERUS ESCULENTUS); Rice (ORYZA SATIVA); Dayflower, spreading (COMMELINA DIFFUSA); Ammannia, purple (AMMANNIA COCCINEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Flatsedge, rice field (CYPERUS IRIA); Arrowhead (SAGGITARIA sp.)
EXPERIMENTAL DOSE: 2.24 and 3.36 kg/ha
APPLICATION METHODS: Preemergence spray; 9.8 l./ha at 1.23 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; 4 locations in Texas; ricefield flooding (when applicable) after treatment; soil--Edna clay loam, Edna sandy loam, and Katy sandy loam
EFFECTS: Moderate effective control of junglerice, spangletop, nutsedge, and ammannia with slight or no control of other weeds and no adverse effect on rice
COMMENTS: IMC 3950 either preemergence or early post as a tank mixture with propanil controlled bearded sprangletop and junglerice, chlorpropham plus propanil showed promise for control of bearded sprangletop; oxadiazon and bifenox controlled bearded sprangletop as preemergence treatments; bifenox plus oxadiazon appeared to be best tank mix for control of several species
REFERENCE: Palmer, R.D. and C.W. Helpert, "Rice Weed Control in the Western Belt of Texas," Proc. S. Weed Sci. Soc. 27:127-135 (1974).

<3517>
CHEMICAL NAME: Propanoic acid, 2-[4-(2,4-dichlorophenoxy)phenoxy]-, methyl ester
CHEMICAL COMMON NAME: HOE-23408
PLANT: Crabgrass (DIGITARIA ISCHAEMUM); Bluegrass, Kentucky (POA PRATENSIS); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 4.48 kg/ha; 3% EC
APPLICATION METHODS: Preemergence spray (40 psi and 50 gal/A) and granule broadcast
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; evaluation time--up to 5 mo
EFFECTS: Slight to moderate crabgrass control with severe to moderate injury to turfgrasses
COMMENTS: Best control of crabgrass in both turf species obtained by DCPA, butralin, AC-92390, and prosulfalin; all rates of granular HOE-22870 provided good crabgrass control in red fescue; in bluegrass, HOE-22870 controlled crabgrass only at the high rate or when the low rate was reapplied
REFERENCE: Watschke, T.L., D.J. Wehner, and J.M. Duich, "Pre- and Postemergence Crabgrass Control in Turf," Proc. NE Weed Sci. Soc. 30:358-366 (1976).

<3518>
CHEMICAL NAME: Propanoic acid, 2-[4-(2,4-dichlorophenoxy)phenoxy]-, methyl ester
CHEMICAL COMMON NAME: HOE-23408
PLANT: Blackgrass (ALOPECURUS MYOSUROIDES); Oat, wild (AVENA LUDOVICIANA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1.0 to 2.5 kg/ha; 36% EC
APPLICATION METHODS: Foliar spray; 250 l./ha at 2.0 bars pressure
EXPERIMENTAL CONDITIONS: Field study; time period--1974 to 1976; 3 locations
EFFECTS: Effective control of A. LUDOVICIANA and moderate control of A. MYOSUROIDES at 1.0 kg/ha with slight crop damage at 2.5 kg/ha
COMMENTS: Effectiveness of treatments on mixed populations varied, and some herbicides antagonistic to one another in mixture; most consistent mixture was 2.0 kg/ha isoproturon with 0.5 kg/ha difenzoquat which when applied in autumn controlled all three grass weeds
REFERENCE: Holroyd, J. and M.E. Thornton, "Herbicides and Herbicide Mixtures for the Control of AVENA FATUA, A. LUDOVICIANA, and ALOPECURUS MYOSOROIDES in Winter Cereals," Proc. 1976 Brit. Crop Prot. Conf.-Weeds, 1:103-110 (1976).

<3519>
CHEMICAL NAME: Propanoic acid, 2-[4-(2,4-dichlorophenoxy)phenoxy]-, methyl ester
CHEMICAL COMMON NAME: HOE 23408
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Crabgrass, hairy (DIGITARIA SANGUINALIS); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: Preemergence; postemergence, and preplant incorporated sprays; 18 gal/A at 30 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam
EFFECTS: Preemergence, 1.5 lb/A--moderate to effective weed control with no adverse effect on cabbage
COMMENTS: None of the herbicides used unacceptably phytotoxic, but alachlor resulted in slight temporary stunting; alachlor most effective herbicide on total weed spectrum and HOE 23408 most effective for control of annual grasses
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicide Trial for Direct Seeded Fall Cabbage on Long Island," Proc. NE Weed Sci. Soc. 30:197-199 (1976).

<3520>
CHEMICAL NAME: Propanoic acid, 2-[4-(2,4-dichlorophenoxy)phenoxy]-, methyl ester
CHEMICAL COMMON NAME: HOE-23408
PLANT: Broadleaf weeds; Grasses; Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.12, 2.2, and 4.5 kg/ha
APPLICATION METHODS: Preplant, preplant incorporated (6-7.5 cm depth), preemergence, and postemergence sprays; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: In preplant application, effective control of grass weeds and slight control of broadleafs and no adverse effect on tomato yield; in postemergence application of effects about same with possible reduction of tomato yield
COMMENTS: In direct-seeded tomatoes, FMC 25213 showed promise for providing broad spectrum weed control; CGA

<3520>
<3520> CONT.
24705 and Hoe 23408 found selective for annual grasses; with transplanted tomatoes, oxidiazon preplant and Hercules 26905 preplant incorporated provided effective weed control in addition to compounds mentioned for seeded crop
REFERENCE: Henne, R.C., "New Compounds with Potential for Weed Control in Tomatoes," Proc. Northeast. Weed Sci. Soc. 31:207-214 (1977).

<3521>
CHEMICAL NAME: Propanoic acid, 2-[4-(2,4-dichlorophenoxy)phenoxy]-, methyl ester
CHEMICAL COMMON NAME: HOE-23408
PLANT: Broadleaf weeds; Grasses; Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: 1.12, 2.24, and 3.36 kg/ha
APPLICATION METHODS: Preplant incorporated (7 cm depth); preemergence and postemergence sprays; 308 l./ha; combined treatments
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: In postemergence, effective to moderate control of grass weeds and slight control of broadleafs with moderate phytotoxicity but no yield reduction of carrots at two highest rates
COMMENTS: Combination treatment consisting of trifluralin preplant incorporated followed by a postemergence application of linuron provided season long weed control; carrots tolerated postemergence applications of Hoe 23408 which selectively controlled annual grass weeds; combination of Hoe 23408 plus linuron resulted in more rapid weed kill than with either material alone
REFERENCE: Henne, R.C., "Chemical Weed Control in Carrots," Proc. Northeast Weed Sci. Soc. 31:238-243 (1977).

<3522>
CHEMICAL NAME: Propanoic acid, 2-[4-(2,4-dichlorophenoxy)phenoxy]-, methyl ester
CHEMICAL COMMON NAME: IMC-3950
PLANT: Broadleaf weeds; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 4.48 kg/ha
APPLICATION METHODS: Pre-plant incorporated, preemergence, or postemergence sprays; 280 l./ha at 2 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1972 and 1973
EFFECTS: Effective weed control with no adverse effect on beet
COMMENTS: Broadleaf weed control achieved in table beets with cycloate, CNP, pebulate, lenacil, pyrazon, IMC 3950, TCA + pyrazon, and pebulate followed by pyrazone; fair weed control achieved with EPTC, propachlor, and solubor; poor weed control obtained from CDEC, chlorpropham, pyrazon, and TCA; yields expressed as $/ha or tons/ha reduced by chlorpropham, lenacil, CNP, and TCA
REFERENCE: Phatak, S.C. and D.J. Cantliffe, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Table Beets," Hortsci. 10(3):271-273 (1975).

<3523>
CHEMICAL NAME: Propanoic acid, 2-chloro-
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 3.2%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<3524>
CHEMICAL NAME: Propanoic acid, 2-oxo-
CHEMICAL COMMON NAME: Pyruvic acid
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 3x10(-3)M
APPLICATION METHODS: Submersion of oat coleoptiles
EXPERIMENTAL CONDITIONS: Laboratory study; oat coleoptile assay--increased or inhibited growth of 3mm sections in solutions containing sucrose, IAA, and experimental compounds; coleoptile age--66-69 hr (and at other times)
EFFECTS: Growth stimulation
COMMENTS: Most organic acids accelerated growth in absence of inhibitor but in presence of auxin and sucrose or auxin alone, inhibition of growth by low concentrations of iodoacetate and reversal of inhibition by certain organic acids; sensitivity of sections both to inhibitor and to growth promoting effect of the acids varied with age of the plants; lowest concentration causing definite inhibition steadily decreased with increasing age
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. I. The Action of Iodoacetate and Organic Acids on the AVENA Coleoptile," Am. J. Bot. 35:271-281 (1948).

<3525>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Crabgrass (DIGITARIA sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA); Pigweed (AMARANTHUS sp.); Spanish needles (BIPENS BIPINNATA)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Postemergence spray; 40 gal/A at 25 psi; 85% WP Formulation

<3525> CONT.
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of pigweed and less effective control of remaining weeds
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<3526>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: 2,2-DPA
PLANT: Apple (PYRUS MALUS)
EXPERIMENTAL DOSE: 11.2, 22.4 and 44.8 kg/ha
APPLICATION METHODS: Postemergent herbicide applied annually each spring; applications were 1, 2, and 4 times recommended rate
EXPERIMENTAL CONDITIONS: Field studies conducted for 6 years; soil -- sandy clay loam surface overlying medium clay at 40-50 cm depth; average annual rainfall 640 mm; 6 mature trees for each treatment
EFFECTS: During very dry season (first year) severe injury, defoliation and yield reduction noted, no injury in normal seasons; yield reduction also observed in third year, more pronounced at two heaviest rates
COMMENTS: Possible injury symptoms in second year masked by red spider mite infestation and hail storm in December; first season was dry and third season results masked again by spider mites and by drought
REFERENCE: Campbell, J.E. and A. D. Mears, "Effects of Long-Term Use of Several Herbicides on Apple Trees," Aust. J. Exp. Agric. Anim. Husb. 14(67):262-265 (1974).

<3527>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Bursage, wollyleaf (FRANSERIA TOMENTOSA)
EXPERIMENTAL DOSE: 5.6 kg/ha
APPLICATION METHODS: Soil sterilant application with and without incorporation; postemergence sprays at varied stages of plant development; liquid sprays at 188 l/ha; pellets or granules broadcast by hand; oil emulsion
EXPERIMENTAL CONDITIONS: Field study; non-crop areas; time period--1962 to 1968; evaluation time--up to 3 yr; soil--clay loam
EFFECTS: No control of bursage
COMMENTS: Fenac controlled woollyleaf bursage for 3 years in noncropped areas; effective control of woollyleaf bursage obtained when treated at bud stage or earlier with ester formulation of 2,4-D
REFERENCE: Smith, D.T., A.F. Wiese, and A.W. Cooley, "Woollyleaf Bursage Response to Selected Herbicides," Weed Sci. 20(6):554-556 (1972).

<3528>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 5.0 lb/A
APPLICATION METHODS: Postemergence spray; 10 and 20 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Chlorosis and stunting at higher rates but no adverse effect on yield
COMMENTS: Karmex-2,4-D ester appeared to cause depression in cane yields but compensated for this by an improvement in juice quality; overall improvement in cane yields and juice quality resulting from Gesapax-Actril-D treatment quite noticeable as it outyielded all others; only Daconate seemed to result in noticeable sugar yield depression primarily because of its adverse effect on juice quality; dalapon and gramoxone in combination with 2,4-D ester did not seriously affect yields
REFERENCE: Maddan, W.L. and E.M. Christie, "Weed Control at Monymusk," Jamaican Assoc. Sugar Tech. 33:76-82 (1972).

<3529>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, and 10(-6)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-3)M; moderate control at 10(-4)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3530>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Apple (PYRUS MALUS); Fescue, creeping red (FESTUCA RUBRA); Quackgrass (AGROPYRON REPENS); Bluegrass, annual (POA ANNUA); Orchard grass (DACTYLIS GLOMERATA); Crabgrass, large (DIGITARIA SANGUINALIS); Milkweed (ASCLEPIAS SYRIACA); Goldenrod (SOLIDAGO CANADENSIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 7.5 lb/A
APPLICATION METHODS: Postemergence spray application delivered at 35 gal/A in April or early May
EXPERIMENTAL CONDITIONS: 2 apple orchards--trees 3 years old at start of experiment; 1 row = 1 herbicide

<3530>
<3530> CONT.
treatment 36 sq. ft. area treated around each free; weed control and apple tree injury ratings made June 20 and September 20 for 10 consecutive years
EFFECTS: Orchard 1--15% broadleaf and 88% grass control on June 20, no broadleaf and 63% grass control on September 20; orchard 2--34% broadleaf and 84% grass control on June 20, no broadleaf control and 61% grass control on September 20; no injury to apple trees
COMMENTS: Results reported represent 10 year summary; chemical weed control practical and safe for use in apple orchards; to reduce chance of apple tree injury, alternate herbicide treatment every other year; combinations of herbicides more effective than single herbicides except dichlobenil
REFERENCE: Langer, C.A., W.H. Smith, and G. Gebe, "Ten Consecutive Years of Weed Control in Each of Two Separate Apple Orchards in New Hampshire," Proc. Northeast. Weed Sci. Soc. 27:257-261 (1973).

<3531>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Bermudagrass, common (CYNODON DACTYLON); Nutsedge, purple (CYPERUS ROTUNDUS); Bindweed, field (CONVOLVULUS ARVENSIS); Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 4 to 16 lb per season
APPLICATION METHODS: 2 lb/A repeated applications
EXPERIMENTAL CONDITIONS: Weed control evaluated on basis of commercial control (70 to 100%)
EFFECTS: Commercially unacceptable control of johnson grass, nutsedge and bindweed and variable results with bermuda grass at 4 to 8 lb; acceptable for johnson grass and bermuda grass but unacceptable for nutsedge and bindweed at 8 to 16 lb
COMMENTS: Article primarily concerns glyphosate as effective perennial weed killer--described as being nonselective; results of 3 studies presented only in tabular form; experiment 2 results reported on basis of average values
REFERENCE: Lange, A., H. Kempen, W. McHenry, and O. Leonard, "Roundup--A New Perennial Weed Killer," Calif. Agric. 27(2):6-7 (1973).

<3532>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Grasses; Bahiagrass (PASPALUM NOTATUM)
EXPERIMENTAL DOSE: 6.0, 7.4 and 7.5 lb/A
APPLICATION METHODS: Postemergence spray; 37-50 gal/A
EXPERIMENTAL CONDITIONS: Field study; 3 locations (FL); time period--1971 and 1972; evaluation time--8 to 26 wks
EFFECTS: Slight to effective control of grass weeds with 2 applications
COMMENTS: Combinations of diuron or simazine plus 2 applications of dalapon, 2 applications of dalapon alone or single applications of glyphosate provided best grass control; in addition, bahiagrass controlled with oxadiazon and asulam
REFERENCE: Arnold, C.E. and J.B. Aitken, "Perennial Grass Control in Pecan Orchards," Proc. South. Weed Sci. Soc. 26:231-235 (1973).

<3533>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Johnson grass (SORGHUM HALEPENSE); Signalgrass, broadleaf (BRACHIARIA PLATYPHYLLA); Cocklebur, common (XANTHIUM PENSYLVANICUM); Morningglory, bigroot (IPOMOEA PANDINATA); Trumpet creeper (CAMPSIS RADICANS); Sida, spiny (SIDA SPINOSA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 5.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 gal/A; 30 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; minimum tillage, stale seedbed, and no tillage experiments; weeds treated and crop planted 13 to 35 days after herbicide application
EFFECTS: Not highly effective against test species and moderate stunting of soybean after 90 days
COMMENTS: Preplant and at-planting applications provided excellent control of johnsongrass and all other weeds; addition of residual preemergence herbicides, cultivation, and post-directed applications of glyphosate to 18-24 inch soybeans provided acceptable seedling control
REFERENCE: Connell, J.T. and C.W. Derting, "Glyphosate Performance on Johnson Grass and Associated Weed Species in No-Tillage Soybeans," Proc. South. Weed Sci. Soc. 26:51-58 (1973).

<3534>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 20 and 30 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghu, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in sorghum, oat, and cucumber at 20 and 30 ppm; shoot--less than 50% inhibition in sorghum and oat at 20 ppm, less than 50% in sorghum at 30 ppm but 50% or greater inhibition in oat
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<3535>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Johnson grass (SORGHUM HALEPENSE); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.4 lb/A
APPLICATION METHODS: Postemergence
EXPERIMENTAL CONDITIONS: Field tests; 4 replications, 68 rows wide and 30 feet long; Vicksburg fine sandy loam and Collins silt loam; each replication divided into 4 main plots, 16 rows wide plus 4 ft row wide check; fall applications to established johnsongrass sod
EFFECTS: Some foliage injury
COMMENTS: Two weeks after application, ground plowed and other herbicides added in spring
REFERENCE: Overton, J.R., J.A. Mullins, and L.S. Jeffery, "Johnsongrass Control in Corn Harvested for Silage," Tenn. Farm Home Sci. Prog. Rep. 94:18-20 (1975).

<3536>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 3.4 kg/ha
APPLICATION METHODS: Postemergence September application
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: No excessive legume injury; weeds not controlled
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<3537>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Iris (IRIS sp.); Orange, navel (BREVIPALPUS CALIFORNICUS); Arborvitae, Nare's (THUJA OCCIDENTALIS); False cyprus, goldplume (CHAMAECYPARIS PISIFERA); Juniper, Savin (JUNIPERUS SABINA); Sedge (CYPERUS sp.); Thatch (IMPERTA CYLINDRICA); Thatch (ARUNDINELLA BENGALENSIS); Bermudagrass, common (CYNODON DACTYLON); Panicum (PANICUM ANTIDOTALE); Cutgrass (LEERSIA HEXANDRA); Panikotali (HYGRORYZA ARISTATA); Khorihadol (ECHINOCHLOA COLONUM); (POGONATHERUM CRINITUM); Ronga banspatia (PASPALUM SCROBICULATUM); Samsolokh (EUPATORIUM ODORATUM); Chickweed (AGERATUM CONYZOIDES); Mile-a-minute (MIKANIA MICRANTHA); Bagrahote (BORRERIA HISPIDA); Madhusoleng (POLYGONUM CHINENSE); Smartweed, common (POLYGONUM HYDROPIPER); Tearthumb (POLYGONUM PERFOLIATUM)
EXPERIMENTAL DOSE: 6.0 kg/ha
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of most grasses; none or slight to moderate control of remaining species
COMMENTS: Most effective herbicides applied singly were paraquat and 2,4-D; combined herbicide applications (dalapon, paraquat, 2,4-D, Ansar-31, and amitrol) equally or more effective
REFERENCE: Barboa, B.C., "Chemical Control of Weeds in Drains, Drain Sides, and Other Non-Tea Pockets," Two Bud 19(1):25-28 (1972).

<3538>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Cogongrass (IMPERATA CYLINDRICA)
EXPERIMENTAL DOSE: 4.1, 8.3, and 12.4 kg/ha
APPLICATION METHODS: Postemergence spray; 300 l./ha; 0.5% surfactant
EXPERIMENTAL CONDITIONS: Field study; pure cogongrass stands in near-dormant state; time period--1971 and 1972
EFFECTS: Effective control at high rate; moderate control at lower rates; regrowth after one year unless multiple applications used
COMMENTS: All soil sterilants provided acceptable control; single applications of TCA and dalapon controlled cogongrass without prolonged soil sterility
REFERENCE: Dickens, R. and G.A. Buchanan, "Control of Cogongrass with Herbicides," Weed Sci. 23(3):194-197 (1975).

<3539>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 8.3 kg/ha
APPLICATION METHODS: Preplant incorporated; 187 l./ha; applied annually over a period of six years in fall or spring; dalapon applied postemergence; combined and sequential treatments also applied
EXPERIMENTAL CONDITIONS: Field study; soils--Sharkey clay, Bosket fine sandy loam; and Dundee silty clay loam; time period--1965 to 1970
EFFECTS: Slight to moderate control of johnsongrass with no adverse effect on soybean yield
COMMENTS: Effective johnsongrass control on Dundee silty clay loam followed treatments of nitralin or trifluralin, but 2 years or more of continuous treatment needed for acceptable control
REFERENCE: McWhorter, C.G., "Johnsongrass Control in Soybeans with Trifluralin and Nitralin," Weed Sci. 22(2):111-115 (1974).

<3540>
<3540>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Canarygrass, reed (PHALARIS ARUNDINACEA); Quackgrass (AGROPYRON REPENS); Bromegrass, smooth (BROMUS INERMIS); Bluegrass, annual (POA ANNUA); Fescue, creeping red (FESTUCA RUBRA); Redtop (AGROSTIS ALBA)
EXPERIMENTAL DOSE: 11.2 and 22.4 kg/ha
APPLICATION METHODS: Postemergence spray; 374 l./ha
EXPERIMENTAL CONDITIONS: Field study; evaluation time--3 mos; weeded manually to produce uniform stands
EFFECTS: Reed canarygrass and redtop more susceptible than red fescue
COMMENTS: Amitrole and dalapon combinations more toxic to reed canarygrass, smooth brome, and redtop; pyrichlor toxic to all grasses
REFERENCE: Hodgson, J.M., "Differential Response of Ditchbank Grasses to Herbicides," Weed Sci. 21(5):421-423 (1973).

<3541>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Paragrass (PANICUM PURPURASCENS)
EXPERIMENTAL DOSE: 3, 5, 6, and 10 lb/A; sodium salt; non-ionic spreader-sticker
APPLICATION METHODS: Postemergence spray; 25 gal/A; up to three repeat applications
EXPERIMENTAL CONDITIONS: Field study; soil--Humatas clay loam; evaluation time--up to 20 wk; clipped or non-clipped paragrass plots treated; combined applications
EFFECTS: Single application resulted in moderate control for up to 12 wks; second and third repeat applications resulted in effected control for up to 10 wks
COMMENTS: Spray applied to regrowth generally gave better control for longer periods; best control obtained with dalapon + TCA applied twice; low rate initially and one-half rate at repeat application fully as effective as higher rate tested; dalapon alone nearly as effective as dalapon + TCA combination on both older growth and regrowth
REFERENCE: Whitney, A. S., A. V. Ramos, and A. S. Rios, "Chemical Control of Paragrass (BRACHIARIA MUTICA) in a Humid Upland Area," J. Agr. Univ. P. R. 57(2):129-135 (1973).

<3542>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Broadleaf weeds; Grasses; Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 7.5 lb/A
APPLICATION METHODS: Postemergence spray; 35 gal/A; dichlorobenil was a 4% G formulation
EXPERIMENTAL CONDITIONS: Field study; orchards in two locations; three varieties of apples; time period--1963 to 1972
EFFECTS: Moderate control of grasses and slight control of broadleafs with no adverse effect on apple
COMMENTS: All chemicals effective, but combinations gave more complete control of all weeds; several weeds gave slight problems in spots once the main weed competition killed out.
REFERENCE: Langer, C.A., W.H. Smith, and G. Gebe, "Ten Consecutive Years of Weed Control in Each of Two Separate Apple Orchards in New Hampshire," Proc. Northeast. Weed Sci. Soc. 27:257-261 (1973).

<3543>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 5.0 kg/ha
APPLICATION METHODS: Postemergence spray; 85% sodium salt; two applications with 3-da interval
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Killed within 3 wk
COMMENTS: Translocated in aerial organs to rhizomes, no transformation of herbicide detected during 72 h following applications; in rhizomes as well as in stolons, dalapon caused growth inhibition and necrosis of buds while root growth apparently not affected
REFERENCE: Maroder, H. L., "Physiological Effects of Dalapon in CYNODON DACTYLON (L.) Pers.," Weed Res. 13(1):19-23 (1973).

<3544>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Preplant non-incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: At 4.0 lb/A, effective control of broadleaf weeds and moderate control of grasses with slight damage to cotton and corn and no damage of soybean
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but fairly safe on corn; MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(isopropylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<3545>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Bromegrass, downy (BROMUS TECTORUM); Wheatgrass, intermediate (AGROPYRON INTERMEDIUM)
EXPERIMENTAL DOSE: 4.0 to 12.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 or 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; 2 locations in WA; time period--1958 to 1960
EFFECTS: At 4.0 lb rate, effective downy brome control (1 yr), but moderate damage of wheatgrass
COMMENTS: IPC and CIPC most effective herbicides for controlling downy brome without serious injury to perennial grasses grown for seed production; endothal gave good downy brome control
REFERENCE: Canode, C.L., W.C. Robocker, and T.J. Muzik, "Grass Seed Production as Influenced by Chemical Control of Downy Brome," Weeds 10(3):216-219 (1962).

<3546>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Grasses; Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 40 gal/A at 38 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sharpsburg silty clay loam; time period--1954 to 1956; sprayed at emergence or one and four weeks after emergence
EFFECTS: Effective grass control at 2.0 lb rate with slight adverse effect on alfalfa at the 4.0 lb rate
COMMENTS: TCA and dalapon gave very good results in all 3 years when applied 1 week after emergence of alfalfa; 2,2,3-TPA material appeared somewhat less active, requiring about twice as heavy a rate of application as dalapon to achieve comparable results; dalapon and TCA gave evidence of temporary injury to alfalfa, but resulted in little or no stand reduction
REFERENCE: McCarthy, M.K. and P.F. Sand, "Chemical Weed Control in Seedling Alfalfa. I. Control of Weedy Grasses," Weeds 6(2):152-160 (1958).

<3547>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Plants
EXPERIMENTAL DOSE: 10.0 lb/ft mi (ft mi x 8.25= lb/A); sodium salt
APPLICATION METHODS: Spray with asphalt nozzles
EXPERIMENTAL CONDITIONS: Field study; applied to road shoulders just prior to laying asphalt
EFFECTS: Effective control of weeds
COMMENTS: Herbicides useful in reducing cost of maintaining asphalt pavements; presurface application can be expected to give adequate vegetation control at least during season of treatment; post-surface applications required later to prevent encroachment by Bermudagrass from adjacent unpaved areas
REFERENCE: Pruett, L.J. and W.G. McCully, "Presurface Applications of Herbicides for Highways," Down to Earth 17(3):11-12 (1961).

<3548>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Crabgrass, large (DIGITARIA SANGUINALIS); Wiregrass (ELEUSINE INDICA); Goosegrass (ELEUSINE AEGYPTICA); Love-grass (ERAGROSTIS MAJOR); (PANICUM TEXANUM); Bermudagrass, common (CYNODON DACTYLON); (FIMBRISTYLIS MILIACEA); Nutsedge, purple (CYPERUS ROTUNDUS); Galingale (CYPERUS IRIA); Sensitive-plant (MIMOSA PUDICA); Weeds; Amaranth (AMARANTHUS VIRIDIS); (ACHYRANTHES ASPERA); (CLEOSIA ARGENTIA); Croton (CROTON SPARCIFLORUS); Dayflower (COMMELINA BENGHALENSIS); Spurge, garden (EUPHORBIA HIRTA); Indigo (INDIOFERA CORDIFOLIA); Groundcherry (PHYSALIS MINIMA); Morningglory (IPOMOEA OBSCURA); (SIDA RHOMBIFOLIA)
EXPERIMENTAL DOSE: 5.6 kg/ha
APPLICATION METHODS: Preemergence spray 5 days before planting in main crop, 15 days after main crop harvest in ratoon crop
EXPERIMENTAL CONDITIONS: Field experiments; main crop and ratoon crop; 1.6 X 6.4 plots; unweeded control and hoed control (3 hoeings)
EFFECTS: No effect on bud germination or shoot regeneration of ratoon crop; number of millable cane increased over unweeded control but not over farmer's practice (hoed control); less weeds/50 cm(2) area than in hoed control--63% less weeds in planted crop than unweeded check, 77% less in ratoon crop
COMMENTS: Sedges and grasses controlled better than broadleaved weeds; ratoon crop--sprouts from harvested crop; sugarcane injury not reported; effects on specific weeds not given
REFERENCE: Patro, G.K. and G.C. Tosh, "Effect of Different Herbicides on Weeds and Yield of Sugarcane," Andhra Agric. J. 18(5):185-188 (1971).

<3549>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 8.0 to 25.0 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control with slight regrowth (3 mo)
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<3550>
<3550>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: 2,2-DPA
PLANT: Clover, white (TRIFOLIUM REPENS); Barleygrass (HORDEUM LEPORINUM); Clover, subterranean (TRIFOLIUM SUBTERRANEUM)
EXPERIMENTAL DOSE: 2.0 to 16.0 lb/A; acid
APPLICATION METHODS: Foliar spray; 80 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of barleygrass at 2 to 8 lb/A rates with significant damage to clover (but recovery at lowest rates)
COMMENTS: Subterranean clover much more susceptible than white clover to 2,2-DPA; in autumn, following treatment with 2,2-DPA, 16 clover seedlings per square link recorded; white clover more tolerant of 2,2-DPA although yields significantly reduced by 2 lb an acre
REFERENCE: Squires, V.R., "Herbicides for the Selective Control of Barley Grass in Irrigated Clover Pastures," Australian J. Exp. Ag. 3(8):35-38 (1963).

<3551>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.4 to 819.2 ppmw (of soil)
APPLICATION METHODS: Added to soil in water solutions
EXPERIMENTAL CONDITIONS: Greenhouse study; soils--Yolo fine sandy loam, Yolo clay loam, and Egbert loam; persistence studied in container culture in which oats indicator plant was planted, harvested, replanted, etc on 4 to 8 wk cycle
EFFECTS: At 6.4 ppmw and higher concentrations, herbicide persisted for 2 or 3 crop cycles
COMMENTS: Initial toxicity in order of decreasing toxicity was: fenuron and monuron, CIPC, dalapon and TCA, CMIPC, and TBA; comparative inactivation in order of most rapid to slowest inactivation, was; TCA, dalapon, CIPC, CMIPC, TBA, fenuron, and monuron
REFERENCE: Crafts, A.S. and H. Drever, "Experiments with Herbicides in Soils," Weeds 8(1):12-18 (1960).

<3552>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<3553>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Velvetgrass (HOLCUS LANATUS); Timothy (PHLEUM PRATENSE)
EXPERIMENTAL DOSE: 0.47, 0.95, and 1.90 kg/ha
APPLICATION METHODS: Postemergence spray; 450 l./ha; Oxford precision sprayer--'0' size nozzle
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At highest rate, moderate damage to timothy and moderate control of HOLCUS
COMMENTS: Linuron proved most successful in controlling HOLCUS; gave highest yields of timothy at hay cut and heaviest individual seed heads; glyphosate particularly severe on timothy growth; asulam offered reasonable degree of control at a high rate of spraying
REFERENCE: Harkess, R.D. and R.A. Hope, "The Control of Yorkshire Fog (HOLCUS LANATUS L.) in Timothy Swards," Proc. 12th. Br. Weed Cont. Conf. 2:733-736 (1974).

<3554>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Clover (TRIFOLIUM sp.); NASSELLA TUSSOCK; Cocksfoot; Clover, white (TRIFOLIUM REPENS); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 2.5 to 20 lb/A
APPLICATION METHODS: Foliar spray; 25 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At 20 lb/A, effective control or severe damage to tussock and clovers with no adverse effect on other species
COMMENTS: Nucleus area of nassella tussock practically killed completely by TCA followed by oversowing of grasses and clovers; kill of old tussock and establishment of pasture excellent; evidence of gradual reversion to tussock as result of restablishment from seed
REFERENCE: Beggs, J.P. and W.F. Leonard, "Nassella Tussock Control: Preventing Reversion," New Zealand J. Agric. 97:211 (1958).

<3555>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Bamboo (BAMBUSA ARUNDINACEA); Bamboo (BAMBUSA TEXTILIS); Bamboo (BAMBUSA TULDA); Bamboo, common (BAMBUSA VULGARIS); Bamboo (DENDROCALAMUS ASPER); Bamboo, solid (DENDROCALAMUS STRICTUS); Bamboo (GIGANTOCHLOA APUS); Bamboo, running type (PHYLLOSTACHYS BAMBUSOIDES); Bamboo (PHYLLOSTACHYS MEYERI); Bamboo (SINOCALAMOUS OLDHAMI)
EXPERIMENTAL DOSE: 0.4 to 1.6 lb/50 culms; 0.05% Tween-20
APPLICATION METHODS: Basal watering or foliage spray; 2 gal/50 culms
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Severe damage or kill of all species
COMMENTS: Most effective treatments monuron, TCA, and dalapon to bases of intact or cut bamboo culms and amitrole as spray to regrowth foliage; combinations of herbicides found most effective on common bamboo, B. VULGARIS; for highly resistant species, second treatment necessary
REFERENCE: Cruzado, H.J., T.J. Muzik, and W.C. Kennard, "Control of Bamboo in Puerto Rico by Herbicides," Weeds 9(1):20-26 (1961).

<3556>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Diuron
PLANT: Quackgrass (AGROPYRON REPENS); Grasses; Broadleaf weeds; Arborvitae, Nare's (THUJA OCCIDENTALIS); False cyprus, goldplume (CHAMAECYPARIS PISIFERA); Juniper, Savin (JUNIPERUS SABINA)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Postemergence spray; directed to weed foliage and base of ornamentals
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam
EFFECTS: Slight to moderate control of weeds and none to slight damage of ornamentals
COMMENTS: Long term effective weed control obtained with little or no damage to mature narrowleaf evergreen plants, when glyphosate applied in combination with preemergent herbicides
REFERENCE: Haramaki, C., "Control of Perennial and Annual Weeds in Established Plantings of Narrowleaf Evergreens," Proc. Northeast. Weed Sci. Soc. 31:329-324 (1977).

<3557>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-
CHEMICAL COMMON NAME: Dalapon
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 3.22 to 2.98 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<3558>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-, allyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 4 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 2 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<3559>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-, benzyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 3 and 3 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 1 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<3560>
<3560>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-, butoxyethyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 4 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 2 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<3561>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-, n-butyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats, evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 0 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<3562>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-, n-butyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 0 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<3563>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-, sodium salt
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1.0% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive, and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 2 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 4 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 3 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<3564>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-, sodium salt
CHEMICAL COMMON NAME: Tafapon
PLANT: Sorghum (SORGHUM BICOLOR); Plants
EXPERIMENTAL DOSE: 6.25 kg/ha
APPLICATION METHODS: Formulation--85% tafapon; preemergence treatments as spray in 1000 l. water
EXPERIMENTAL CONDITIONS: Rain-fed conditions, light black soil; 4 replications, randomized block design with plot size 610 cm x 458 cm
EFFECTS: Marked depressive effect on sorghum establishment; not highly efficient in weed control; depressed grain yield
COMMENTS: Simazine and atrazine more effective in weed control and grain yield than other herbicides tested; combination of simazine (1.25 kg/ha) preemergence plus 2,4-D (1 kg/ha) postemergence also gave good weed control and grain yield
REFERENCE: Krishnamurthy, K., "Effect of Herbicides on Weeds and Yield of Sorghum," Indian J. Agric. Sci. 40(5):474-480 (1970).

<3565>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-, 2-(2,4,5-trichlorophenoxy)ethyl ester
CHEMICAL COMMON NAME: Erbon
PLANT: Weeds; Pine, loblolly (PINUS TAEDA)
EXPERIMENTAL DOSE: 20 lb/A
APPLICATION METHODS: Preemergence, sprayed over newly planted pine seedlings at 40 psi and 20 gpa
EXPERIMENTAL CONDITIONS: Field trials, Arkansas, Mississippi, and Oklahoma; randomized plots 10 by 100 ft; sandy loams, sandy clay loams, silty sand, and loamy clay soils; 8 wk evaluations in Mississippi and Oklahoma, at end of growing season in Arkansas
EFFECTS: Arkansas and Oklahoma--2 sites, 65 and 95% weed control; Mississippi--2 sites, 90 and 85% weed control

<3565> CONT.
COMMENTS: Relatively non-toxic to pines, no specific pine injury reported; deficient rainfall at first site listed for Arkansas and Oklahoma, herbicidal activity possibly hampered
REFERENCE: O'Loughlin, T.C., L.R. Nelson, J.D. Walstad, J.H. Breland, and J.E. Voeller, "Velpar and Other Preemergence Herbicides for Use in Establishment of Loblolly Pine Plantations," Proc. South. Weed Sci. Soc. 29:262-268 (1976).

<3566>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-, 2-(2,4,5-trichlorophenoxy)ethyl ester
CHEMICAL COMMON NAME: Erbon
PLANT: Cogongrass (IMPERATA CYLINDRICA)
EXPERIMENTAL DOSE: 67 and 190 kg/ha@p
APPLICATION METHODS: Postemergence spray; 300 l./ha; 0.5% surfactant
EXPERIMENTAL CONDITIONS: Field study; pure cogongrass stands in near-dormant state; time period--1971 and 1972
EFFECTS: Effective control at both rates but regrowth after one year
COMMENTS: All soil sterilants provided acceptable control; single applications of TCA and dalapon controlled cogongrass without prolonged soil sterility
REFERENCE: Dickens, R. and G.A. Buchanan, "Control of Cogongrass with Herbicides," Weed Sci. 23(3):194-197 (1975).

<3567>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-, 2-(2,4,5-trichlorophenoxy)ethyl ester
CHEMICAL COMMON NAME: Erbon
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 675 lb/A
APPLICATION METHODS: Postemergence, 1 treatment
EXPERIMENTAL CONDITIONS: Screening trials--50 sq ft plots, 2 replications in a randomized block design; field test--only promising herbicides tested
EFFECTS: Initial control--100%; regrowth after 3 months--none; seedling growth after 3 months--none
REFERENCE: Youngner, V.B. and J.R. Goodin, "Control of PENNISETUM CLANDESTINUM, Kikuyugrass," Weeds 9(2):238-242 (1961).

<3568>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-, 2-(2,4,5-trichlorophenoxy)ethyl ester
CHEMICAL COMMON NAME: Baron
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 80 gal/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control with no regrowth (3 mo)
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<3569>
CHEMICAL NAME: Propanoic acid, 2,2-dichloro-, 2-(2,4,5-trichlorophenoxy)ethyl ester
CHEMICAL COMMON NAME: Erbon
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sowthistle, perennial (SONCHUS ARVENSIS)
EXPERIMENTAL DOSE: 0.5 to 1.0 lb/sq rd
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; combinations of herbicide treatments, seasonal application, cultivation, and cropping investigated over 3 yr period (1955-1957)
EFFECTS: Effective thistle control with 2 to 3 years residual effect
COMMENTS: Canada thistle and perennial sowthistle reacted to 2,4-D and MCPA; ester and amine forms of 2,4-D equally effective for sowthistle, while both and MCPA equal for Canada thistle; both herbicides prevent seed production, kill susceptible plants and weaken resistant plants
REFERENCE: Derscheid, L.A., R.L. Nash, and G.A. Wicks, "Thistle Control With Cultivation, Cropping and Chemicals," Weeds 9(1):90-102 (1961).

<3570>
CHEMICAL NAME: Propanoic acid, 2,2,3-trichloro-
CHEMICAL COMMON NAME: 2,2,3-TPA
PLANT: Grasses; Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 40 gal/A at 38 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sharpsburg silty clay loam; time period--1954 to 1956; sprayed at emergence or one and four weeks after emergence
EFFECTS: Moderate grass control at 2.0 and 4.0 lb rates with no adverse effect on alfalfa
COMMENTS: TCA and dalapon gave very good results in all 3 years when applied 1 week after emergence of alfalfa; 2,2,3-TPA material appeared somewhat less active, requiring about twice as heavy a rate of application as dalapon to achieve comparable results; dalapon and TCA gave evidence of temporary injury to alfalfa, but resulted in little or no stand reduction
REFERENCE: McCarthy, M.K. and P.F. Sand, "Chemical Weed Control in Seedling Alfalfa. I. Control of Weedy Grasses," Weeds 6(2):152-160 (1958).

<3571>
<3571>
CHEMICAL NAME: Propanoic acid, 2,2,3,3,-tetrafluoro-, sodium salt
CHEMICAL COMMON NAME: Tetrapion
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 1.79 to 6.67 lb/A
APPLICATION METHODS: Foliar spray; varied rates and combinations
EXPERIMENTAL CONDITIONS: Field study; time period--1969 to 1972
EFFECTS: Severe damage to strawberry
COMMENTS: Terbacil applied in February gave excellent control of perennial grasses in strawberries; terbacil in August caused no reduction in crop yield but did not give good control of grasses; pronamide in October gave moderate control of grass weeds but caused reduction in crop yield
REFERENCE: Rath, N. and T.F. O'Callaghan, "Further Experiments With Herbicides for the Control of Perennial Grass Weeds in Strawberries," Proc. 11th. Br. Weed Cont. Conf. 11(1):398-405 (1972).

<3572>
CHEMICAL NAME: Propanoic acid, 2,2,3,3,-tetrafluoro-, sodium salt
CHEMICAL COMMON NAME: Tetrapion
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM); Toetoe (CORDATERIA FULVIDA); Couchgrass(AGROPYRON REPENS); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 6.0 to 12.0 kg/ha
APPLICATION METHODS: Postemergence spray; 600 l./ha
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slow initial control at 3 mos but moderate to effective control at 9.0 kg/ha and higher rates after 6-10 mos
COMMENTS: Tetrapion demonstrated activity against Kikuyu grass, couch, Indian doab, browntop, and toetoe; on Kikuyu grass, tetrapion showed high level of control after 12 months, although initial activity slow
REFERENCE: Rowe, G.R. and B.P. O'Connor, "Tetrapion: Evaluation for the Control of Rhizomatous Grasses and Toetoe," Proc. 28th. N.Z. Weed and Pest Cont. Conf. 28:173-176 (1975).

<3573>
CHEMICAL NAME: Propanoic acid, 2,3-dichloro-2-methyl-, allyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 1 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 0 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 0 at 0.1 and 1.0%, respectively
COMMENTS: Not very toxic to seedling but effective seed killers
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<3574>
CHEMICAL NAME: Propanoic acid, 2,3-dichloro-2-methyl-, benzyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 2 and 2 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 0 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<3575>
CHEMICAL NAME: Propanoic acid, 2,3-dichloro-2-methyl-, butoxyethyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 2 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<3576>
CHEMICAL NAME: Propanoic acid, 2,3-dichloro-2-methyl-, sodium salt
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 4 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 2 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<3577>
CHEMICAL NAME: Propanoic acid, 2,3-dichloro-2-methyl-, vinyl ester
PLANT: Rape (BRASSICA NAPUS); Millet, barnyard (PANICUM CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.1 and 1% (weight/volume)
APPLICATION METHODS: As spray to 2-week old seedlings
EXPERIMENTAL CONDITIONS: Seeds sown in 60 X 40 X 6 cm flats; evaluations at end of fourth week; rating scale as follows: 0--no visible injury, 1--slight injury, 2--foliage showing 50% injury or kill, 3--all foliage killed, stem still alive and 4--whole plant killed
EFFECTS: Rape--injury rating of 0 and 3 at 0.1 and 1.0%, respectively; millet--injury rating of 0 and 4 at 0.1 and 1.0%, respectively; tomato--injury rating of 0 and 0 at 0.1 and 1.0%, respectively
REFERENCE: Yokoyama, K. and K. Munakata, "Herbicidal Activities of Halogenoalkylcarboxylic Acid Esters. II. Effects on Seedlings," Bot. Gaz. 122:67-69 (1960).

<3578>
CHEMICAL NAME: Propanol, trichlorobenzyloxy-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<3579>
CHEMICAL NAME: Propanol, 2,3,6-trichlorobenzyloxyl
CHEMICAL COMMON NAME: Tritac
PLANT: Plants
EXPERIMENTAL DOSE: 20 and 40 gal/A
APPLICATION METHODS: Postemergence spray; two applications
EXPERIMENTAL CONDITIONS: Field study, road cracks and road right-of-way
EFFECTS: Effective weed control for 12 mos
COMMENTS: Initial postpaving treatment made with beginning of growth in spring; TCA applied at rate of 24 lb/ft-mile, and subsequent applications made as needed; treatment interval about 30 days
REFERENCE: McCully, W. G., W. J. Bowmer, and A. F. Wiese, "Control of Grasses and Weeds Growing in Asphalt Pavements," PANS 16(3):497-504 (1970).

<3580>
CHEMICAL NAME: Propenedinitrile, [(3-chlorophenyl)hydrazine]-
CHEMICAL COMMON NAME: CCCP
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.0 micro M
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated barley seedlings
EFFECTS: Reduced ATP level (increased protein synthesis) and increased O(2) uptake
COMMENTS: CHM had minimal effects on energy transfer (respiratory O(2) uptake and ATP levels) in barley root cells; uncoupler CCCP significantly increased respiratory O(2) uptake and drastically reduced ATP level; ADP levels measured only in a few cases
REFERENCE: Luttge, U., A. Lanchli, E. Ball, and M.G. Pitman, "Cycloheximide: A Specific Inhibitor of Protein Synthesis and Intercellular Ion Transport in Roots," Experimentia 30:470-471 (1974).

<3581>
CHEMICAL NAME: Propionalide, 3-(N-butyl-carbamoyloxy)-
CHEMICAL COMMON NAME: R-11914
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days

<3581>
<3581> CONT.
EFFECTS: No effect on shoot emergence
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3582>
CHEMICAL NAME: Propionalide, 3-(N-isopropylcarbamoyloxy)-
CHEMICAL COMMON NAME: R-11913
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect on shoot emergence
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3583>
CHEMICAL NAME: Propionamide, D(-) (phenylcarbamoyloxy)-2N-ethyl-
CHEMICAL COMMON NAME: RF-11561
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-4) and 10(-5)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3584>
CHEMICAL NAME: Propionamide, D(-) (3-chlorophenylcarbamoyloxy)-2N-isopropyl-
CHEMICAL COMMON NAME: RF-11755
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-4) and 10(-5)M; poor control at 10(-6)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3585>
CHEMICAL NAME: Propionamide, 2-(2,6-dinitro-4-toluidine)-N-methyl-
CHEMICAL COMMON NAME: SD-15179
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 0.6 and 0.8 kg/ha
APPLICATION METHODS: Preemergence September application
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Excessively injurious to legumes; weeds not controlled
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<3586>
CHEMICAL NAME: Propionamide, 2-(4-methyl-1,6-dinitroanilino)-N-methyl-
CHEMICAL COMMON NAME: MDMP
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1X10(-5)M
APPLICATION METHODS: Seed soak
EXPERIMENTAL CONDITIONS: Laboratory study; excised wheat embryo; embryo's removed after treatment application
EFFECTS: Inhibited protein synthesis
COMMENTS: Disruptive effect of MDMP on polyribosome configuration was manifestation of both the inhibition of amino acid incorporation by tissue and inhibitory effect on seedling growth; multi-ribosome polyribosomes more active than monomers and oligomers in synthesizing protein
REFERENCE: Baxter, R., V. C. Knell, H. J. Somerville, H. M. Swain, and D. P. Weeks, "Effect of MDMP on Protein Synthesis in Wheat and Bacteria," Nature 243(5401):139-142 (1973).

<3587>
CHEMICAL NAME: Propionanilide, 3,4-dichloro-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<3588>
CHEMICAL NAME: Propionanilide, 3,4-dichloro-
PLANT: Mustard, white (SINAPIS ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 4.0 kg/ha; WP; 25% active compound; 5% lye, 5% Emmulat P-141, and 65% kaolin
APPLICATION METHODS: Pre- and postemergence applications; method not specified
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Significant kill of mustard in both applications; leaf withering of wheat in postemergence application only
COMMENTS: Synthesized 3,4-dichloroanilides had no or little herbicidal activity, as compared with high activity of known herbicides, 3,4-dichloropropionanilide and 2,4-dichlorophenoxyacetic acid; introduction of phenoxy groupings into acid moiety of active fatty acid-3,4-dichloroanilides as well as introduction of 3,4-dichloroaniline group into carboxylic group of active phenoxyacetic acids decreased herbicidal activity
REFERENCE: Matolcsy, G. and M. Hamran, "The Herbicidal Effect on Some Substituted Anilides," Weed Res. 4(2):118-122 (1963).

<3589>
CHEMICAL NAME: Propionate, methyl-2-chloro-3-[4-chlorophenyl]-
CHEMICAL COMMON NAME: Bidisin
PLANT: Oat, wild (AVENA FATUA); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE); Beet, sugar (BETA VULGARIS); Vetch, common (VICIA SATIVA); Pea, sweet (PISUM SATIVUM); Duckweed (LEMNA MINOR); Rape (BRASSICA CAMPESTRIS); Corn (ZEA MAYS); Carrot (DAUCUS CAROTA); Mustard, Chinese (BRASSICA JUNCEA); Mustard, Chinese (BRASSICA JUNCEA); Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 5.0 and 8.0 l./ha
APPLICATION METHODS: Postemergence spray; 400 l/ha
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1971
EFFECTS: Effective control of wild oats with no adverse effect on wheat, barley, sugar beet, vetch, rape, mustard, and winter spinach; slight to moderate adverse effects on peas, fodder beet, corn, and carrots
COMMENTS: Resulted in statistically significant yield increases averaging 20% in spring cereals and 8% in winter wheat; in sugar beet, application of Bidisin did not result in a significant improvement of yield, sugar content or quality
REFERENCE: Kampe, W., "Effect of Bidisin (Chlorphenprop-Methyl) on AVENA FATUA L. and Yields of Cereals and Sugar Beet," Pflanzensch. Nachricht. 26(3):299-316 (1973).

<3590>
CHEMICAL NAME: Propionate, sodium alkyl-beta-amino-
CHEMICAL COMMON NAME: Deriphat 151
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: No survival of PHALAENOPSIS at 1000 ppm and reduced survival at 100 ppm; no growth of EPIDENDRUM at 100 and 1000 ppm
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<3591>
CHEMICAL NAME: Propionate, 2-(2,4,5-trichlorophenoxy)ethyl-2-2-dichloro-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<3592>
<3592>
CHEMICAL NAME: Propionic acid
CHEMICAL COMMON NAME: Propionic acid
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: Slight damage to sunflower leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<3593>
CHEMICAL NAME: Propionic acid
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse effect on peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<3594>
CHEMICAL NAME: Propionic acid, ammoniumalkyl-beta-amino-
CHEMICAL COMMON NAME: Deriphat M21
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: No survival of PHALAENOPSIS at 1000 ppm and reduced survival at 100 ppm; no growth of EPIDENDRUM at 1000 ppm
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<3595>
CHEMICAL NAME: Propionic acid, beta-indole-
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS); Willow (SALIX sp.); Oat (AVENA SATIVA); Cress (LEPIDIUM SATIVUM); Mustard, white (BRASSICA ALBA)
EXPERIMENTAL DOSE: 1:1000 to 1:500,000
APPLICATION METHODS: Solution-saturated cotton placed on petiole of intact tomato and bean plants; willow shoots placed in solutions; pre-germinated seed (36 hr) of oats, cress, and mustard placed in test solutions
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Petiole bending of tomato and bean; enhanced rooting of willow at 1:10,000; no growth of oats, cress, and mustard at 1:1000
COMMENTS: Heteroauxin and homologue beta-indolylpropionic acid caused epinastic curvatures of tomato, but not other indole derivatives of ascorbic acid; all compounds found effective in stimulating root development in willow branches, ascorbic being also effective for shoots; vitamin C produced maximum effect, closely followed by heteroauxin and more remotely by the other indole derivatives; only low concentrations stimulating; high concentrations lethal or at least retarding
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<3596>
CHEMICAL NAME: Propionic acid, trichloro-, sodium salt
CHEMICAL COMMON NAME: EH-6289
PLANT: Oat, wild (AVENA FATUA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Mallow (MALVA sp.); Beet, sugar (BETA VULGARIS); Foxtail (SETARIA sp.)
EXPERIMENTAL DOSE: 2, 3, 4, 5, and 6 lb/A
APPLICATION METHODS: Pre- and postemergence
EFFECTS: Excellent wild oat control; significant and practical grass control with postemergence treatment; preemergence treatment controlled grasses and reduced broadleaves 40%; beets not visibly injured but one trial showed reduced sucrose content, some yield reduction
REFERENCE: Holst, E.M., E.G. Eckroth, and C.E. Carmany, "Chemical Weed Control in Some Holly Areas in Montana, Colorado, and Wyoming," J. Am. Soc. Sugar Beet Technol. 9(6):499-502 (1957).

<3597>
CHEMICAL NAME: Propionic acid, w-skatolyl-
CHEMICAL COMMON NAME: Omega-skatolylmalonic acid
PLANT: Willow (SALIX sp.); Oat (AVENA SATIVA); Cress (LEPIDIUM SATIVUM); Mustard, white (BRASSICA ALBA)
EXPERIMENTAL DOSE: 1:1000 and 1:10,000
APPLICATION METHODS: Willow shoots placed in solutions; pre-germinated seed (36 hr) of oats, cress, and mustard placed in solutions
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Enhanced willow rooting at 1:10,000; reduced growth of oat, cress, and mustard seedlings
COMMENTS: Heteroauxin and homologue beta-indolylpropionic acid caused epinastic curvatures of tomato, but not other indole derivatives or ascorbic acid; all compounds found effective in stimulating root development in willow branches, ascorbic being also effective for shoots; vitamin C produced maximum effect, closely followed by heteroauxin and more remotely by the other indole derivatives; only low concentrations stimulating; high concentrations lethal or at least retarding
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<3598>
CHEMICAL NAME: Propionic acid, w-skatolyl-
CHEMICAL COMMON NAME: Omega-skatolylmalonic acid
PLANT: Willow (SALIX sp.); Oat (AVENA SATIVA); Cress (LEPIDIUM SATIVUM); Mustard, white (BRASSICA ALBA)
EXPERIMENTAL DOSE: 1:1000 and 1:10,000
APPLICATION METHODS: Willow shoots placed in solutions; pre-germinated seed (36 hr) of oats, cress, and mustard placed in solutions
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Enhanced willow rooting at 1:10,000; reduced growth of oat, cress, and mustard seedlings
COMMENTS: Heteroauxin and homologue beta-indolylpropionic acid caused epinastic curvatures of tomato, but not other indole derivatives or ascorbic acid; all compounds found effective in stimulating root development in willow branches, ascorbic being also effective for shoots; vitamin C produced maximum effect, closely followed by heteroauxin and more remotely by the other indole derivatives; only low concentrations stimulating, high concentrations lethal or at least retarding
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<3599>
CHEMICAL NAME: Propionic acid, 2-(2,4-dichlorophenoxy)-, mixt. with (2,4-dichlorophenoxy)acetic acid
CHEMICAL COMMON NAME: BK-170
PLANT: Plants
EXPERIMENTAL DOSE: 3 gal/24 gal/A
APPLICATION METHODS: Postemergence application; fuel oil carrier, Microfoil boom; 12-48 gal/A oil; 35 psi
EXPERIMENTAL CONDITIONS: Field study; dormant season
EFFECTS: Slight eradication of brush
COMMENTS: On basis of effectiveness, several combined mixes of herbicides appear about as effective as 2,4,5-T in brush eradication despite considerable variation in effects
REFERENCE: Chappell, W.E., "Herbicidal Mixtures for the Control of Mixed Brush in Right-of-Way," Proc. South. Weed Sci. Soc. 26:306-309 (1973).

<3600>
CHEMICAL NAME: Propionic acid, 2-(2,4-dichlorophenoxy)-, mixt. with (2,4-dichlorophenoxy)acetic acid
CHEMICAL COMMON NAME: BK-170
PLANT: Maple, red (ACER RUBRUM);Oak, red (QUERCUS RUBRA);Pine (PINUS sp.);Birch (BETULA sp.);Gum, sweet (LIQUIDAMBAR STYRACIFLUA);Blackberry (RUBUS sp.);Privet (LIGUSTRUM sp.);Dogwood (CORNUS sp.)
EXPERIMENTAL DOSE: 3 gal/A
APPLICATION METHODS: Postemergence application; fuel oil carrier, Microfoil boom; 12-48 gal/A oil, 35 psi
EXPERIMENTAL CONDITIONS: Field study; dormant season
EFFECTS: Effective eradication of pine, birch, and blackberry moderate eradication of red oak, sweet gum, and dogwood; slight eradication of red maple and privet
COMMENTS: On basis of effectiveness, several combined mixes of herbicides appear about as effective as 2,4,5-T in brush eradication despite considerable variation in effects
REFERENCE: Chappell, W.E., "Herbicidal Mixtures for the Control of Mixed Brush in Right-of-Way," Proc. South. Weed Sci. Soc. 26:306-309 (1973).

<3601>
<3601>
CHEMICAL NAME: Propionic acid, 2-(2,4,5-trichlorophenoxy)-, butylether ester
PLANT: Primrose, water (JUSSIAEA sp.)
EXPERIMENTAL DOSE: 2.0, 4.0, and 6.0 lb/100 gal; 0.02% liquid Lux
APPLICATION METHODS: Spray to wet above-water portions of plant
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control at 30 days
COMMENTS: Little difference between chemicals after 11 days; all treatments gave complete kill by 30 days after spraying
REFERENCE: Hardcastle, W.S. and J.T. Davis, "The Control of Water-Primrose in Quiescent Waters," Proc. S. Weed Conf. 12:152-153 (1959).

<3602>
CHEMICAL NAME: Propionic acid, 3-phenyl-
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 50 ppm
EXPERIMENTAL CONDITIONS: Isolated from decomposing plant matter
EFFECTS: Inhibition of seedling root elongation
COMMENTS: Phytotoxin production and analysis--main emphasis of paper
REFERENCE: Toussoun, T.A., A.R. Weinhold, R.G. Linderman, and Z.A. Patrick, "Nature of Phytotoxic Substances Produced during Plant Residue Decomposition in Soil," Phytopathol. 58:41-45 (1968).

<3603>
CHEMICAL NAME: Propionic acid, 4-(4'-chlorophenoxy)-phenoxy-alpha, isobutyl ester
CHEMICAL COMMON NAME: HOE 22870
PLANT: Soybean (GLYCINE MAX); Corn (ZEA MAYS); Foxtail, giant (SETARIA FABERI)
EXPERIMENTAL DOSE: 0.84-3.36 kg/ha
APPLICATION METHODS: Postemergence spray; aqueous carrier--187 l. /ha ; EC formulation
EXPERIMENTAL CONDITIONS: Field study; silt loam soil (4.5% organic matrer); preemergence application of trifluralin on weed-free (control) plots; cultivation (2X) and hand weeding as required; time--3 wk
EFFECTS: Effective control of corn and giant foxtail in soybean crop at 0.84-1.68 kg/ha depending on weed seedling stage; HOE 22870 caused soybean damage; HOE 23408 caused slight leaf chlorosis and necrosis
COMMENTS: Bentazon used successfully in combination with little apparent effect on soybean seed yield at application rate of 3.36 kg/ha; susceptibility of 32 inbred corn strains varied
REFERENCE: Anderson, R.N., "Control of Volunteer Corn and Giant Foxtail in Soybeans," Weed Sci. 24(3):253-256 (1976).

<3604>
CHEMICAL NAME: Propionic acid, 4-(4'-chlorophenoxy)phenoxy-alpha-, isobutyl ester
CHEMICAL COMMON NAME: HOE-22870
PLANT: Fescue, creeping red (FESTUCA RUBRA); Bluegrass, Kentucky (POA PRATENSIS); Crabgrass (DIGITARIA ISCHAEMUM); Bentgrass, Rhode Island (AGROSTIS TENUIS)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Spray application in water at rate of 172 gpa; July treatments--3 trials of (1) two 2 lb/A applications 10 days apart, (2) three 2 lb/A treatments 10 days apart, and (3) two 4 lb/A treatments 10 days apart
EXPERIMENTAL CONDITIONS: 4 x 5 ft plots with 3 replications; turfgrass injury assessed in July, August, and September; crabgrass control assessed in September
EFFECTS: Trial 1, 51% crabgrass control; trial 2, 78% crabgrass control; trial 3,91% crabgrass control; minor turfgrass injury in all trials
COMMENTS: Potential for crabgrass control
REFERENCE: Jagschitz, J.A., "Postemergence Crabgrass and Nutsedge Control in Turfgrass with Herbicides," Proc. Northeast. Weed Sci. Soc. 29:376-381 (1975).

<3605>
CHEMICAL NAME: Propionic acid, 4-(4'-chlorophenoxy)phenoxy-alpha-, isobutyl ester
CHEMICAL COMMON NAME: HOE 22870
PLANT: Pine, loblolly (PINUS TAEDA); Pine, short-leaf (PINUS ECHINATA); Pine, slash (PINUS ELIOTTII); Weeds
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Preemergence spray; EC formulation
EXPERIMENTAL CONDITIONS: Trials in 6 southeastern states; randomized complete block design; 6 by 50 ft plot size; 0.50 to 0.75 in. water applied after spraying; weed control and seedling tolerance determined
EFFECTS: No effect on seedling production; poor to moderate weed control
REFERENCE: South, D.B., "Pre- and Postemergent Weed Control in Forest Nurseries," Proc. South. Weed Sci. Soc. 30:269-278 (1977).

<3606>
CHEMICAL NAME: Propionic acid, 4-(4'-chlorophenoxy)phenoxy-alpha-, isobutyl ester
CHEMICAL COMMON NAME: HOE 22870
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 2.4 kg/ha
APPLICATION METHODS: Postemergence at 3-5 and 6-8 tiller stage
EXPERIMENTAL CONDITIONS: Foxtail control study in ryegrass field; ryegrass cultivar Melle; randomized block design with 3 replicates
EFFECTS: Excellent foxtail control; no visible reygrass
COMMENTS: Weed infestation slight
REFERENCE: Mead, H., B.L. Ross, and R.J. Finch, "Preliminary Investigations on the Control of Wild-Oat (AVENA FATUA L.) Cultivated Oak (AVENA SATIVA L.) and Blackgrass (ALOPECURUS MYOSUROIDES HUDS.) in Seed Crops of Various Varieties of Perennial and Italian Ryegrass," Proc. Brit. Weed Control Conf. 12(2):707-714 (1974).

<3607>
CHEMICAL NAME: Propionoic acid, 4-(4'chlorophenoxy)-phenoxy-alpha, isobutyl ester
CHEMICAL COMMON NAME: HOE-22870
PLANT: Soybean (GLYCINE MAX); Corn (ZEA MAYS); Foxtail, giant (SETARIA FABERI)
EXPERIMENTAL DOSE: 0.84 and 1.68 kg/ha; EC
APPLICATION METHODS: Postemergence spray; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--silt loam; time period--1973 and 1974; greenhouse study on corn inbreds
EFFECTS: Effective control of foxtail and corn at 1.68 kg/ha with no adverse effect on soybeans
COMMENTS: HOE-22870 or HOE-23408 controlled corn and giant foxtail; soybeans tolerated of either herbicide; both herbicides performed quite similarly, but HOE 22870 generally more effective on giant foxtail and less effective on corn than HOE 23408
REFERENCE: Andersen, R.N., "Control of Volunteer Corn and Giant Foxtail in Soybeans," Weed Sci. 24(3):257-260 (1976).

<3608>
CHEMICAL NAME: Propionoic acid, 4-(4'chlorophenoxy)-phenoxy-alpha, isobutyl ester
CHEMICAL COMMON NAME: HOE-22870
PLANT: Crabgrass (DIGITARIA ISCHAEMUM); Bluegrass, Kentucky (POA PRATENSIS); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 3.36 to 6.72 kg/ha; 3% EC and 2.5% G
APPLICATION METHODS: Preemergence spray (40 psi and 50 gal/A) and granule broadcast
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; evaluation time--up to 5 mo
EFFECTS: At 4.48 kg/ha, effective control of crabgrass with slight damage to turfgrasses; granular more effective
COMMENTS: Best control of crabgrass in both turf species obtained by DCPA, butralin, AC-92390, and prosulfalin; all rates of granular HOE-22870 provided good crabgrass control in red fescue; in bluegrass, HOE-22870 controlled crabgrass only at the high rate or when the low rate was reapplied
REFERENCE: Watschke, T.L., D.J. Wehner, and J.M. Duich, "Pre- and Postemergence Crabgrass Control in Turf," Proc. NE Weed Sci. Soc. 30:358-366 (1976).

<3609>
CHEMICAL NAME: Propionoic acid, 4-(4'chlorophenoxy)-phenoxy-alpha, isobutyl ester
CHEMICAL COMMON NAME: HOE-22870
PLANT: Blackgrass (ALOPECURUS MYOSUROIDES); Oat, wild (AVENA LUDOVICIANA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.13 and 0.25 kg/ha; 36% EC
APPLICATION METHODS: Foliar spray; 250 l./ha at 2.0 bars pressure
EXPERIMENTAL CONDITIONS: Field study; time period--1974 to 1976; 3 locations
EFFECTS: Effective control of A. MYOSUROIDES with no adverse effect on wheat or A. LUDOVICIANA
COMMENTS: Effectiveness of treatments on mixed populations varied, and some herbicides antagonistic to one another in mixture; most consistent mixture was 2.0 kg/ha isoproturon with 0.5 kg/ha difenzoquat which when applied in autumn controlled all three grass weeds
REFERENCE: Holroyd, J. and M.E. Thornton, "Herbicides and Herbicide Mixtures for the Control of AVENA FATUA, A. LUDOVICIANA, and ALOPECURUS MYOSOROIDES in Winter Cereals," Proc. 1976 Brit. Crop Prot. Conf.-Weeds, 1:103-110 (1976).

<3610>
CHEMICAL NAME: Proxazolon
CHEMICAL COMMON NAME: Proxazolon
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 0.56, 1.12, and 1.68 kg/ha
APPLICATION METHODS: Postemergence spray (liquids) and drop-spreader granular formed; second application made if deemed necessary; 50% WP formulation
EXPERIMENTAL CONDITIONS: Field study; evaluation time--4 mo with mowing at 5 to 8 day intervals
EFFECTS: Delayed growth reduction (slight) at all rates with grass discoloration (also delayed) at highest two rates
COMMENTS: Proxazolon and MBR-12325 retarded growth more than the other materials; proxazolon slower acting than MBR-12325; EL-509 only material that did not significantly retard growth; 4 weeks after initial application, turf that had been significantly reduced in growth, grew faster than untreated; all materials caused an unacceptable discoloration lasting for 2 to 3 weeks; lower rates tended to cause less discoloration, but growth suppression did not last as long as higher rates
REFERENCE: Watschke, T.L., "Growth Regulation of Kentucky Bluegrass With Several Growth Retardants," Agron. J. 68(1):787-791 (1976).

<3611>
CHEMICAL NAME: PSEUDOMONAS TABACI toxin
CHEMICAL COMMON NAME: PSEUDOMONAS TABACI toxin
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Chlorosis and cellular alterations
COMMENTS: Victorin acted rapidly upon both cell wall and plasma membrane structure and function; ammonia also acted quickly upon membranes in general; P. TABACI toxin exerted effects more slowly by gradually suppressing nucleic acid and protein synthesis
REFERENCE: Goodman, R.N., "Phytotoxin-Induced Ultrastructural Modifications of Plant Cells," In: Phytotoxins in Plant Diseases (R.K.S. Wood, A. Ballio, and A. Graniiti, Eds.) Academic Press, London, New York, pp. 311-329 (1972).

<3612>
<3612>
CHEMICAL NAME: Puratized 806
CHEMICAL COMMON NAME: Puratized 806
PLANT: Crabgrass (DIGITARIA sp.); Bentgrass, creeping (AGROSTIS PALUSTRIS); Bentgrass, Rhode Island (AGROSTIS TENUIS)
EXPERIMENTAL DOSE: 1:15,000; 10 gal/1000 sq ft, applied 10 day intervals
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective crabgrass control with no adverse effect on grasses of golf putting green
COMMENTS: Puraturf and Puratized 806, gave good control of crabgrass; twenty-two different treatments used but most had no appreciable effect on crabgrass
REFERENCE: DeFrance, J.A., "Water-Soluble Mercurials for Crabgrass Control in Turf," Greenkeepers' Rept. 15(1):30-31 (1947).

<3613>
CHEMICAL NAME: Purin-6-amine, N-(phenylmethyl)-9-(tetrahydro-2H-pyran-2-yl)-9H-
CHEMICAL COMMON NAME: PBA
PLANT: Bursage, wollyleaf (FRANSERIA TOMENTOSA)
EXPERIMENTAL DOSE: 45 kg/ha
APPLICATION METHODS: Soil sterilant application with and without incorporation; postemergence sprays at varied stages of plant development; liquid sprays at 188 l/ha; pellets or granules broadcast by hand; dimethyl amine salt formulation
EXPERIMENTAL CONDITIONS: Field study; non-crop areas; time period--1962 to 1968; evaluation time--up to 3 yr; soil--clay loam
EFFECTS: Moderate control for up to 3 yr
COMMENTS: Fenac controlled woollyleaf bursage for 3 years in noncropped areas; effective control of woollyleaf bursage obtained when treated at bud stage or earlier with ester formulation of 2,4-D
REFERENCE: Smith, D.T., A.F. Wiese, and A.W. Cooley, "Woollyleaf Bursage Response to Selected Herbicides," Weed Sci. 20(6):554-556 (1972).

<3614>
CHEMICAL NAME: Purin-6-amine, N-(phenylmethyl)-9-(tetrahydro-2H-pyran-2-yl)-9H-
CHEMICAL COMMON NAME: PBA
PLANT: Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.1 to 5.0 lb/A; dimethylamine salts
APPLICATION METHODS: Postemergence spray; 20, 40, and 60 gal/A at 20, 40, and 60 psi
EXPERIMENTAL CONDITIONS: Field study; volatility and drift studied
EFFECTS: Reduced soybean yield at 0.5 and 1.0 lb rates and reduced cotton yield at 0.5 to 5.0 lb
COMMENTS: PBA, 2,3,6-TBA, and fenac sprays applied safely for eradication of perennial weeds in and near cotton; use of these herbicides near soybeans hazardous because very small quantities caused leaf deformities and some loss in seed yield
REFERENCE: Wiese, A.F. and A.G. Martin, "Toxicity of Benxoic Acid Herbicides to Cotton and Soybeans," Weeds 11(1):7-10 (1963).

<3615>
CHEMICAL NAME: Purin-6-amine, N-(phenylmethyl)-9-(tetrahydro-2H-pyran-2-yl)-9H-
CHEMICAL COMMON NAME: SD-8339
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 10-100 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Promoted tuber sprouting
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<3616>
CHEMICAL NAME: Purin-6-amine, N-(phenylmethyl)-9-(tetrahydro-2H-pyran-2-yl)-9H-
CHEMICAL COMMON NAME: PBA
PLANT: Thistle, Russian (SALSOLA IBERICA); Corn (ZEA MAYS); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 2.0 to 8.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Eckman loam; crop rotation and herbicides evaluated for thistle control; time period--1958 to 1962
EFFECTS: Effective thistle control at 6.0 and 8.0 lb/A with no adverse effect on oats but moderate damage to corn
COMMENTS: Stands of Russian knapweed reduced over 80 per cent by several combinations of crops, cultivation and herbicides; two of best crop rotations in a 4-year trial were: (1) a short season of intensive cultivation and a mid-August seeding of bromegrass sprayed with 2,4-D; (2) bromegrass seeded with oat companion crop sprayed with 2,4-D ester; best use of non-selective herbicides in two 2-year trials was spring application of 2,3,6-TBA or PBA, plowing 10 days later, and a corn crop sprayed with 2,4-D ester; reinfestation from established plants not prevented, but annual application of 2,4-D prevented reinfestation from seedlings
REFERENCE: Derscheid, L.A., W.H. Wallace, and L.J. Wrage, "Cropping, Cultivation and Herbicides to Eliminate Russian Knapweed and Prevent Reinfestation," Weeds 11(3):237-243 (1963).

<3617>
CHEMICAL NAME: Purin-6-amine, N-(2-furanylmethyl)-1H-
CHEMICAL COMMON NAME: Kinetin
PLANT: Duckweed (LEMNA PERPUSILLA)
EXPERIMENTAL DOSE: 2 ppm
APPLICATION METHODS: Duckweed fronds grown in test solution
EXPERIMENTAL CONDITIONS: Growth solution--10 ml sterile Hillman's medium (with sucrose) and dilutions of test compounds; fronds placed in medium in 1 by 4 in. test-tubes and grown at 75 F with 14 hr illumination each day; number of fronds determined after 3, 5, 7, and 9 days of incubation; 4 replications
EFFECTS: 50% inhibition of frond production
COMMENTS: Addition of adenine to growth medium completely reversed inhibition
REFERENCE: Perlman, D. and J.B. Semar, "Inhibition by Purines of the Production of Fronds in LEMNA PERPUSILLA," Nature 215:760-761 (1967).

<3618>
CHEMICAL NAME: Purin-6-amine, N-(2-furanylmethyl)-1H-
CHEMICAL COMMON NAME: Kinetin
PLANT: Bladderwort (UTRICULARIA NIFLEXA)
EXPERIMENTAL DOSE: 5 mg/l.
APPLICATION METHODS: Addition to nutrient solution
EXPERIMENTAL CONDITIONS: Laboratory study; IN VITRO culture of shoot tips of U. INFLEXA in glass tubes or flasks containing White's nutrient medium; incubation temperature--28 C; photoperiod--18 hr; evaluation time--up to 10 wk
EFFECTS: Reduced growth but increased flowering under short-day conditions; increased growth and no flowering under long-day conditions
COMMENTS: MEFA showed strong herbicidal effect and killed plants; AMO-1618 and coumarin inhibited apical as well as lateral bud growth; These three compouds and ABA, kinetin, BA, and zeatin unable to promote flowering under non-inductive conditions; BA stimulated growth in both long and short days; even in the latter conditions AMO-1618 and coumarin totally inhibited flowering, whereas ABA, kinetin and BA permitted 80-100 per cent of the cultures to flower; zeatin lowered the percentage of flowering cultures
REFERENCE: Ram, H.Y.M., H. Harada, and J.P. Nitsch, "Studies on Growth and Flowering in Axenic Cultures of Insectivorous Plants. III. Effects of Photoperiod, Ethrel, Morphactin and a Few Other Growth Substances and Metabolic Inhibitors on UTRICULARIA INFLEXA," Z. Pflanzenphysiol. Bd. 68(5):235-253 (1972).

<3619>
CHEMICAL NAME: Purin-6-amine, N-(2-furanylmethyl)-1H-
CHEMICAL COMMON NAME: Kinetin
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1X10(-5)M
APPLICATION METHODS: Solution immersion
EXPERIMENTAL CONDITIONS: Laboratory study; sections of etiolated pea hypocotyls immersed in solutions; 250 mg/5 ml; evaluation time--24 hr; temperature--25C
EFFECTS: Increased growth and respiration
COMMENTS: Activity of IAA in control series increased to same extent as fresh matter, i.e. by about 40%; Phosfon 1) and CCC decreased growth by about 50% and did not significantly increase activity of IAA; coumrin inhibited synthesis of enzyme; of growth stimulators tested, only gibberellic acid (GA-3) significantly decreased activity of IAA in CCC series
REFERENCE: Knypl, J.S. and A. Rennert, "Growth Inhibitors and the Indole-3-acetic Acid Oxidase Contents of Cucumber Hypocotyl Sections," Kurse 54:544 (1967).

<3620>
CHEMICAL NAME: Purin-6-amine, N-(2-furanylmethyl)-1H-
CHEMICAL COMMON NAME: Kinetin
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 100 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Promoted tuber sprouting
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<3621>
CHEMICAL NAME: Purin-6-amine, N-(2-furanylmethyl)-1H-
CHEMICAL COMMON NAME: Kinetin
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Sunflower (HELIANTHUS ANNUUS); Bean, hyacinth (DOLICHOS LAB LAB); Corn (ZEA MAYS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 to 100 ppm
APPLICATION METHODS: Solution soak of sand in which plants were growing; applications (50 ml) 3X weekly on days 1, 3, and 5
EXPERIMENTAL CONDITIONS: Greenhouse study; pot/sand culture, temperature--72-80 F; evaluation time--4 wk
EFFECTS: Reduced growth in height occurred with increasing kinetin concentration
COMMENTS: Inhibition of growth in height observed in which seedlings of sunflower, bean, corn, tomato, and wheat grown in sand; response of the latter two species evident only with 100-ppm kinetin treatment, whereas the other species responded at lower concentrations
REFERENCE: Kemp, H.T., R.G. Fuller, and R.S. Davidson, "Inhibition of Plant Growth by Root-Drench Applications of Kinetin," Science 126:1182 (1957).

<3622>
<3622>
CHEMICAL NAME: Purin-6-amine, 1H-
CHEMICAL COMMON NAME: Adenine
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 2x10(-2) M
APPLICATION METHODS: Incubation of both excised root tips and root tips of intact seedlings in test solution--3 hr exposure; test compound dissolved in 6.67m M phosphate buffer (PH7) or in mixture of equal volumes of tap and distilled water
EXPERIMENTAL CONDITIONS: Incubation solution--0.5% glucose and about 10 uc/ml [32P]orthophosphate or about 0.6 uc/ml [14C] thymidine for excised root tips and glucose plus 1 uc/ml 32P-labelled orthophosphate for intact seedling solution; inhibition of 32P into DNA and RNA recorded
EFFECTS: Incorporation of 32P into DNA and RNA almost completely suppressed; ATP level doubled compared to control--phosphate had no influence on ATP level
COMMENTS: Possible that inhibition of DNA synthesis may result in chromosomal aberrations, but not necessarily so; ATP--adenosine 5'-triphosate; dATP--deoxyadenosine 5'-triphosphate
REFERENCE: Odmark, G. and B.A. Kihlman, "Effects of Chromosome-Breaking Purine Derivatives on Nucleic Acid Synthesis and on the Levels of Adenosine 5'-Triphosphate and Deoxyadenosine 5'-Triphosphate in Bean Root Tips," Mutat. Res. 2:274-286 (1965).

<3623>
CHEMICAL NAME: Purin-6-amine, 1H-
CHEMICAL COMMON NAME: Adenine
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 20 mM
APPLICATION METHODS: Root tips incubated in solution containing test compound
EXPERIMENTAL CONDITIONS: 5-day-old seedling root tips excised and incubated in mixture of equal volumes of tap water and distilled water containing 0.5% glucose, 32P or [3H] thymidine and test compound; observations made in inhibition of phosphorus incorporation
EFFECTS: 32P incorporation in nucleic acids almost totally inhibited; 32P incorporation into inorganic phosphate and acid-soluble fraction 18 and 8.5%, respectively, of untreated control
REFERENCE: Odmark, G., "True or Apparent Inhibition or Nucleic Acid Synthesis by the Chromosome-Breaking Purine Derivatives Adenine and 8-Ethoxycaffeine," Mutat. Res. 14:123-126 (1972).

<3624>
CHEMICAL NAME: Purin-6-one,1,7-dihydro-6H-
CHEMICAL COMMON NAME: Hypoxanthine
PLANT: Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 4.0 mM
APPLICATION METHODS: Immersion of intact leaves
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: No adverse effect
COMMENTS: Intact potato leaf cells degraded adenosine via inosine to hypoxanthine whereas cells ruptured by grinding converted adenosine to adenine; direct conversion of adenosine to adenine also achieved with potato leaf tissue
REFERENCE: Page, O.T., "Effect of Phytotoxins on the Permeability of Cell Membranes," In: (R.K.S. Wood, A. Ballio, and A. Graniti, Eds.) Academic Press London, New York pp. 211-225, Phytotoxins in Plant Diseases (1972).

<3625>
CHEMICAL NAME: Purine-2,6-diamine, 1H-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 0.001M
APPLICATION METHODS: Injection of 300ml fluid of test solution
EXPERIMENTAL CONDITIONS: Two 3-year old peach trees; injection holes drilled 30cm above soil line; trees injected while dormant, at bud swell stage, and at full leaf stage
EFFECTS: Mild leaf burn with rapid recovery
COMMENTS: 0.001M concentration dissolved in 0.1M dimethyl sulfoxide did not increase injury; effect on peach mosaic virus (strain PM-4) and necrotic ringspot virus also investigated
REFERENCE: Pine, T.S., "Reactions of Peach Trees and Peach Tree Viruses to Treatment with Dimethyl Sulfoxide and Other Chemicals," Phytopathology 57: 671-673 (1967).

<3626>
CHEMICAL NAME: Purine-2,6-dione, 8-ethoxy-3, 7-dihydro-1,3,7-trimethyl-1H-
CHEMICAL COMMON NAME: 8-Ethoxycaffeine
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 5.0 X 10(-3) M for 2 hr
APPLICATION METHODS: Immersion of seedlings
EXPERIMENTAL CONDITIONS: Laboratory study; seedlings (6-10 mm); primary root meristem studied
EFFECTS: Chromosome aberrations within 12 hours after treatment
COMMENTS: EOC caused most pronounced undelayed-type mutagenic effect, acting primarily on terminal portions of chromosomes and regions of secondary constrictions; DAB gave low frequency of chromatid-type aberrations; under combined action of the two agents, effect depended on sequence of treatment
REFERENCE: Gechev, K.I., "The Combined Action of Certain Substances on the Hereditary Structures of Barley," Genetica 8(12):86-97 (1972). (UDC 575.24:633.16).

<3627>
CHEMICAL NAME: Purine-2,6-dione, 8-ethoxy-3, 7-dihydro-1,3,7-trimethyl-1H-
CHEMICAL COMMON NAME: 8-Ethoxycaffeine
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 1.5x10(-2) M
APPLICATION METHODS: Immersion in assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; broad bean main and lateral roots studied by autoradiography; Fuelgen squash procedure
EFFECTS: Chromosome aberrations and inhibition of nucleic acid synthesis
COMMENTS: SN, TMU, and EOC induced chromatid aberrations during post-DNA-synthesis or G(2) phase; during period of DNA synthesis (S phase), chromatid aberrations produced by SN and EOC; streptonigrin at least as effective during S as during G(2); effect produced by EOC during S phase considerably weaker than that produced in G(2) cells and consisted mainly of isolocus breaks localized in nucleolar constriction
REFERENCE: Kihlman, B.A. and G. Odmark, "Deoxyribonucleic Acid Synthesis and the Production of Chromosomal Aberrations by Streptonigrin, 8-Ethoxycaffeine and 1,3,7,9-Tetramethyluric Acid," Mut. Res. 2:494-505 (1965).

<3628>
CHEMICAL NAME: Purine-2,6-dione, 8-ethoxy-3,7-dihydro-1,3,7-trimethyl-1H-
CHEMICAL COMMON NAME: EOC
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 10(-2) M
APPLICATION METHODS: Incubation of both excised root tips and root tips of intact seedlings in test solution--3 hr exposure; test compound dissolved in 6.67 mM phosphate buffer (PH7) or in mixture of equal volumes of tap and distilled water
EXPERIMENTAL CONDITIONS: Incubation solution--0.5% glucose and about 10 uc/ml [32P] orthophosphate or about 0.6 uc/ml [14C] thymidine for excised root tips and glucose plus 1 uc/ml 32P-labelled orthophosphate for intact seeding solution; inhibition of 32P into DNA and RNA recorded
EFFECTS: Incorporation of 32P into DNA and RNA fractions strongly inhibited--DNA and RNA synthesis thus inhibited; ATP level reduced 30% in presence of phosphate but increased 40% in absence of phosphate; dATP level increased in presence and absence of phosphate
COMMENTS: Possible that inhibition of DNA synthesis may result in chromosomal aberrations, but not necessarily so; ATP--adenosine 5'-triphosate; dATP--deoxyadenosine 5'-triphosphate
REFERENCE: Odmark, G. and B.A. Kihlman, "Effects of Chromosome-Breaking Purine Derivatives on Nucleic Acid Synthesis and on the Levels of Adenosine 5'-Triphosphate and Deoxyadenosine 5'-Triphosphate in Bean Root Tips," Mutat. Res. 2:274-286 (1965).

<3629>
CHEMICAL NAME: Purine-2,6-dione, 8-ethoxy-3,7-dihydro-1,3,7-trimethyl-1H-
CHEMICAL COMMON NAME: EOC
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 10 mM
APPLICATION METHODS: Root tips incubated in solution containing test compound
EXPERIMENTAL CONDITIONS: 5-day-old seedling root tips excised and incubated in mixture of equal volumes of tap water and distilled water containing 0.5% glucose, 32P or [3H] thymidine and test compound; observations made in inhibition of phosphorus incorporation
EFFECTS: 32P incorporation inhibition--58, 76, 70, and 85% in inorganic phosphate, acid-soluble fraction, RNA, and DNA, respectively
COMMENTS: Comparisons with untreated control
REFERENCE: Odmark, G., "True or Apparent Inhibition or Nucleic Acid Synthesis by the Chromosome-Breaking Purine Derivatives Adenine and 8-Ethoxycaffeine," Mutat. Res. 14:123-126 (1972).

<3630>
CHEMICAL NAME: Purine-2,6,8(3H)-trione, 7,9-dihydro-1,3,7,9-tetramethyl-1H-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 1.5x10(-2) M
APPLICATION METHODS: Immersion in assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; broad bean main and lateral roots studied by autoradiography; Fuelgen squash procedure
EFFECTS: Chromosome aberrations and inhibition of nucleic acid synthesis
COMMENTS: SN, TMU, and EOC induced chromatid aberrations during post-DNA-synthesis or G(2) phase; during period of DNA synthesis (S phase), chromatid aberrations produced by SN and EOC; streptonigrin at least as effective during S as during G(2); effect produced by EOC during S phase considerably weaker than that produced in G(2) cells and consisted mainly of isolocus breaks localized in nucleolar constriction
REFERENCE: Kihlman, B.A. and G. Odmark, "Deoxyribonucleic Acid Synthesis and the Production of Chromosomal Aberrations by Streptonigrin, 8-Ethoxycaffeine and 1,3,7,9-Tetramethyluric Acid," Mut. Res. 2:494-505 (1965).

<3631>
CHEMICAL NAME: Purine, 1H-
CHEMICAL COMMON NAME: Purine
PLANT: Duckweed (LEMNA PERPUSILLA)
EXPERIMENTAL DOSE: 2 ppm
APPLICATION METHODS: Duckweed fronds grown in test solution
EXPERIMENTAL CONDITIONS: Growth solution--10 ml sterile Hillman's medium (with sucrose) and dilutions of test compounds; fronds placed in medium in 1 by 4 in. test-tubes and grown at 75 F with 14 hr illumination each day; number of fronds determined after 3, 5, 7, and 9 days of incubation; 4 replications
EFFECTS: 50% inhibition of frond production
COMMENTS: 2 ppm adenine completely reversed inhibition
REFERENCE: Perlman, D. and J.B. Semar, "Inhibition by Purines of the Production of Fronds in LEMNA PERPUSILLA," Nature 215:760-761 (1967).

<3632>
<3632>
CHEMICAL NAME: Purine, 6-(methylthio)-1H-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 3.5x10(-4) M
APPLICATION METHODS: 96-hr treatment at 25 C
EXPERIMENTAL CONDITIONS: Primary root elongation inhibition determined
EFFECTS: 50% root growth inhibition
REFERENCE: Klingensmith, M.J., "The Effect of Certain Benzazole Compounds on Plant Growth and Development," Am. J. Bot. 48:40-45 (1961).

<3633>
CHEMICAL NAME: Purine, 6-beta-naphthylamino-1H-
PLANT: Duckweed (LEMNA PERPUSILLA)
EXPERIMENTAL DOSE: 10 ppm or greater
APPLICATION METHODS: Duckweed fronds grown in test solution
EXPERIMENTAL CONDITIONS: Growth solution--10 ml sterile Hillman's medium (with sucrose) and dilutions of test compounds; fronds placed in medium in 1 by 4 in. test-tubes and grown at 75 F with 14 hr illumination each day; number of fronds determined after 3, 5, 7, and 9 days of incubation; 4 replications
EFFECTS: No inhibition of frond growth at concentrations less than 10 ppm
REFERENCE: Perlman, D. and J.B. Semar, "Inhibition by Purines of the Production of Fronds in LEMNA PERPUSILLA," Nature 215:760-761 (1967).

<3634>
CHEMICAL NAME: Purine, 6-chloro-1H-
PLANT: Duckweed (LEMNA PERPUSILLA)
EXPERIMENTAL DOSE: 10 ppm
APPLICATION METHODS: Duckweed fronds grown in test solution
EXPERIMENTAL CONDITIONS: Growth solution--10 ml sterile Hillman's medium (with sucrose) and dilutions of test compounds; fronds placed in medium in 1 by 4 in. test-tubes and grown at 75 F with 14 hr illumination each day; number of fronds determined after 3, 5, 7, and 9 days of incubation; 4 replications
EFFECTS: 50% inhibition of frond production
REFERENCE: Perlman, D. and J.B. Semar, "Inhibition by Purines of the Production of Fronds in LEMNA PERPUSILLA," Nature 215:760-761 (1967).

<3635>
CHEMICAL NAME: Purine, 6-methyl-1H-
PLANT: Duckweed (LEMNA PERPUSILLA)
EXPERIMENTAL DOSE: 0.001 ppm
APPLICATION METHODS: Duckweed fronds grown in test solution
EXPERIMENTAL CONDITIONS: Growth solution--10 ml sterile Hillman's medium (with sucrose) and dilutions of test compounds; fronds placed in medium in 1 by 4 in. test-tubes and grown at 75 F with 14 hr illumination each day; number of fronds determined after 3, 5, 7, and 9 days of incubation; 4 replications
EFFECTS: 50% inhibition of frond production
COMMENTS: 0.001 ppm adenine reversed inhibition
REFERENCE: Perlman, D. and J.B. Semar, "Inhibition by Purines of the Production of Fronds in LEMNA PERPUSILLA," Nature 215:760-761 (1967).

<3636>
CHEMICAL NAME: Purine, 6-methyl-1H-
PLANT: Duckweed (LEMNA PERPUSILLA)
EXPERIMENTAL DOSE: 10 to 150 ppb
APPLICATION METHODS: Addition to culture solution
EXPERIMENTAL CONDITIONS: Laboratory study; light intensity--27,500 lux/sq m; temperature--21 to 23 C
EFFECTS: Reduced growth
COMMENTS: Abscisin inhibited growth of LEMNA MINOR cultures; culture appeared nearly completely dormant but revived readily by transferring to fresh medium free of dormin; cytokinin benzyladenine, but not auxin or gibberellin, counteracted dormin effect
REFERENCE: van Overbeek, J., J.E. Loeffler and M.I.R. Mason, "Dormin (Abscisin II), Inhibitor of Plant DNA Synthesis?," Sci. 156:1497-1499 (1967).

<3637>
CHEMICAL NAME: Purine, 6-n-amylamino-1H-
PLANT: Duckweed (LEMNA PERPUSILLA)
EXPERIMENTAL DOSE: 10 ppm or greater
APPLICATION METHODS: Duckweed fronds grown in test solution
EXPERIMENTAL CONDITIONS: Growth solution--10 ml sterile Hillman's medium (with sucrose) and dilutions of test compounds; fronds placed in medium in 1 by 4 in. test-tubes and grown at 75 F with 14 hr illumination each day; number of fronds determined after 3, 5, 7, and 9 days of incubation; 4 replications
EFFECTS: No inhibition of frond growth at concentrations less than 10 ppm
REFERENCE: Perlman, D. and J.B. Semar, "Inhibition by Purines of the Production of Fronds in LEMNA PERPUSILLA," Nature 215:760-761 (1967).

<3638>
CHEMICAL NAME: Purine, 6-n-heptylamino-1H-
PLANT: Duckweed (LEMNA PERPUSILLA)
EXPERIMENTAL DOSE: 10 ppm or greater
APPLICATION METHODS: Duckweed fronds grown in test solution
EXPERIMENTAL CONDITIONS: Growth solution--10 ml sterile Hillman's medium (with sucrose) and dilutions of test compounds; fronds placed in medium in 1 by 4 in. test-tubes and grown at 75 F with 14 hr illumination each day; number of fronds determined after 3, 5, 7, and 9 days of incubation; 4 replications
EFFECTS: No inhibition of frond growth at concentrations less than 10 ppm
REFERENCE: Perlman, D. and J.B. Semar, "Inhibition by Purines of the Production of Fronds in LEMNA PERPUSILLA," Nature 215:760-761 (1967).

<3639>
CHEMICAL NAME: Purine, 8-aza-2,6-diamino-1H-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 0.001M
APPLICATION METHODS: Injection of 300ml fluid of test solution
EXPERIMENTAL CONDITIONS: Two 3-year old peach trees; injection holes drilled 30cm above soil line; trees injected while dormant, at bud swell stage, and at full leaf stage
EFFECTS: No injury
COMMENTS: 0.001M concentration dissolved in 0.1M dimethyl sulfoxide did not increase injury; effect on peach mosaic virus (strain PM-4) and necrotic ringspot virus also investigated
REFERENCE: Pine, T.S., "Reactions of Peach Trees and Peach Tree Viruses to Treatment with Dimethyl Sulfoxide and Other Chemicals," Phytopathology 57: 671-673 (1967).

<3640>
CHEMICAL NAME: Pyradazine, 3-(2-methylphenoxy)-
CHEMICAL COMMON NAME: NIA-20439
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 50 gal at 30 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1969 to 1971
EFFECTS: Moderate control of broadleaf weeds and effective control of grass weeds with no adverse effect on potato yield (postemergence application)
COMMENTS: All treatments rated good to excellent in broadleaf weed control; all chemical treatments equal or superior to cultivation in control of broadleaf weeds
REFERENCE: Swingle, H.D. and C. Mullins, "Herbicide Trials with Irish Potatoes," Proc. S. Weed Sci. Soc. 26:256-258 (1973).

<3641>
CHEMICAL NAME: Pyradazine, 3-(2-methylphenoxy)-
CHEMICAL COMMON NAME: NIA-20439
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 5.6 kg/ha
APPLICATION METHODS: Preemergence spray; 188 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy loam or Cecil clay loam; time period--1969 to 1971
EFFECTS: Effective control of grasses and moderate control of broadleafs with significant damage to sunflower
COMMENTS: Alachlor applied in combination with either chlorpropham or prometryne satisfactorily controlled grasses and broadleaf weeds in sunflowers planted in April and June from 1969 through 1971; higher percentage of broadleaf weeds controlled with herbicides applied preemergence to sunflowers planted in April than when applied to sunflowers planted in June.
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Preplant or Preemergence on Weeds and Sunflowers," Crop Sci. 12(1):650-653 (1972).

<3642>
CHEMICAL NAME: Pyran-4-one, 5-hydroxy-2-(hydroxymethyl)-4H-
CHEMICAL COMMON NAME: Kojic acid
PLANT: Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 10 to 100 ppm
APPLICATION METHODS: Immersion of pregerminated seed in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; pregerminated seed (48 hr) immersed in test solution; temperature--24 to 27 C, in dark; incubated 5 days and transferred to flasks for further 10 days and evaluated
EFFECTS: Increased root and stem growth
COMMENTS: Aspergillic acid had inhibitory effect on elongation and dry weight of seedlings; aflatoxin B more effective than aspergillic acid; inhibition on elongation and weight observed; kojic acid stimulated elongation and dry weight of roots and stems; aflatoxin B developed elaboratic symptoms in treated plants aspergillic and kojic acid did not
REFERENCE: El-Khadem, M., M.S. Tewfik, and Y.A. Hamdi, "Effect of Aflatoxic B(1), Aspergillic and Kojic acid on Peanut Seedlings," Zbl. Bakt. Abt. II 130(556-559) (1975).

<3643>
<3643>
CHEMICAL NAME: Pyrax AA
CHEMICAL COMMON NAME: Pyrax AA
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 46.0 lb/A; dust
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight leaf damage
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:78-83 (1962).

<3644>
CHEMICAL NAME: Pyrazinium, 6,7-dihydro-4-(2-pyridyl)-dipyrido-[1,2-a:2',1'-c]-, dibromide
PLANT: Plants
EXPERIMENTAL DOSE: 7.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Kill of all plants tested
COMMENTS: Complete kill of 6 plant species when applied at 7 lb/A; at lower application rates on mixed grass, flora found to be about one-sixth as active as diquat; compactness of molecule necessary for outstanding phytotoxic properties
REFERENCE: Dickeson, J.E. and L.A. Summers, "One Electron Transfer Properties and Phytotoxicity of a Diquaternary Salt From 2,2':6',2"-Terpyridine," Experientia 25:1247-1248 (1969).

<3645>
CHEMICAL NAME: Pyrazinone, 1-hydroxy-6-(1-methylpropyl)-3-(2-methylpropyl-, (+)-2(1H)-
CHEMICAL COMMON NAME: Aspergillic acid
PLANT: Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 10 to 100 ppm
APPLICATION METHODS: Immersion of pregerminated seed in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; pregerminated seed (48 hr) immersed in test solution; temperature--24 to 27 C, in dark; incubated 5 days and transferred to flasks for further 10 days and evaluated
EFFECTS: Inhibited root and shoot growth
COMMENTS: Aspergillic acid had inhibitory effect on elongation and dry weight of seedlings; aflatoxin B more effective than aspergillic acid; inhibition on elongation and weight observed; kojic acid stimulated elongation and dry weight of roots and stems; aflatoxin B developed elaboratic symptoms in treated plants aspergillic and kojic acid did not
REFERENCE: El-Khadem, M., M.S. Tewfik, and Y.A. Hamdi, "Effect of Aflatoxic B(1), Aspergillic and Kojic acid on Peanut Seedlings," Zbl. Bakt. Abt. II 130(556-559) (1975).

<3646>
CHEMICAL NAME: Pyrazole-1-acetamide, N,N-dimethyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3647>
CHEMICAL NAME: Pyrazole-1-acetamide, N,N,alpha-trimethyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3648>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-alpha-(1-methylethyl)-N,N-dipropyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in preemergence application and none in postemergence
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3649>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-alpha-ethyl-N-methyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: No damage in either application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3650>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-alpha-ethyl-N,N-di-2-propenyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in preemergence and none in postemergence
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3651>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-alpha-ethyl-N,N-dimethyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Severe damage in preemergence application and moderate damage in postemergence
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3652>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-alpha-ethyl-N,N-dipropyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in preemergence and none in postemergence
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3653>
<3653>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-alpha-methyl-N-2-propenyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3654>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-alpha-methyl-N,N-diphenyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: No damage in either application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3655>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-alpha-methyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3656>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-alpha-methyl-1H-
PLANT: Alfalfa (MEDICAGO SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Millet, foxtail (SETARIA ITALICA); Morningglory, tall (IPOMOEA PURPUREA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Johnson grass (SORGHUM HALEPENSE); Morningglory, tall (IPOMOEA PURPUREA); Barley (HORDEUM VULGARE); Oat (AVENA SATIVA); Dichondra (DICHONDRA REPENS); Nutsedge, purple (CYPERUS ROTUNDUS); Oat, wild (AVENA FATUA); Cabbage (BRASSICA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Broadleaf weeds; Bindweed, field (CONVOLVULUS ARVENSIS); Nightshade, black (SOLANUM NIGRUM); Quackgrass (AGROPYRON REPENS); Pepper (CAPSICUM FRUTESCENS); Foxtail, green (SETARIA VIRIDIS); Grasses; Nutsedge, yellow (CYPERUS ESCULENTUS); Jimsomweed (DATURA STRAMONIUM); Blackgrass (ALOPECURUS MYOSUROIDES)
EXPERIMENTAL DOSE: 0.1 to 100 micro M
APPLICATION METHODS: Postemergence spray (assumed)
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as concentration causing 50% inhibition of root and shoot growth
EFFECTS: Moderate damage of broadleaf plants and severe damage to grasses with consistently more damage to roots than shoots
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3657>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N-(1,1-dimethyethyl)-alpha-methyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree

<3657> CONT.
of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3658>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N-(3-methoxyphenyl)-alpha-methyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: No damage in either application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3659>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N-(3,4-dichlorophenyl)-alpha-methyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: No damage in preemergence application and moderate damage in postemergence
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3660>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N-cyclohexyl-alpha-methyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3661>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N,alpha-dimethyl-N-(phenylmethyl)-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3662>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N,alpha-dimethyl-N-2-propenyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree

<3662>
<3662> CONT.
of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3663>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N,N-dimethyl-alpha-(1-methylethyl)-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3664>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N,N,alpha-triethyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in preemergence application and no damage in postemergence
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3665>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N,N,alpha-trimethyl-1H-
CHEMICAL COMMON NAME: U-27267
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Bermudagrass, common (CYNODON DACTYLON); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 2.2 and 3.4 kg/ha
APPLICATION METHODS: Preemergence spray; broadcast application in 376 l./ha water
EXPERIMENTAL CONDITIONS: 3-year test on golf courses, 1-year test at Georgia Experiment Station; variety of loam soils; DCPA, benefin, terbutol, and bensulide used used as chemical checks; summer tests; 1.5 X 3.0 m plots, randomized complete block design with 4 replications
EFFECTS: Crabgrass control for 7 tests--23% avg. at 2.2 kg/ha (0-67% range), 28% avg. at 3.4 kg/ha (0-78% range); no significant effect on bluegrass or bermudagrass
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<3666>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N,N,alpha-trimethyl-1H-
CHEMICAL COMMON NAME: U-27,267
PLANT: Broadleaf weeds; Grasses; Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Pretransplant incorporated and postemergence sprays 27 and 40 gal/A; all herbicides evaluated alone or in combination with metribuzin
EXPERIMENTAL CONDITIONS: Field study; soil--Aura sandy loam
EFFECTS: Effective control of grasses; moderate control of broadleafs; no adverse effect on tomatoes in preemergence application
COMMENTS: Only U-27,267 performed at acceptable level of weed control when used alone; all pre-plant treatments followed by post-plant applications of metribuzin resulted in good weed control, one-half pound of metribuzin early post or late post was consistently the better treatment; none of post-plant metribuzin treatments resulted in significant injury to the tomatoes; all treatments resulted in increased tomato yield
REFERENCE: Grande, J.A. and T. Ombrello, "Weed Control in Transplanted Tomatoes with Metribuzin in Combination with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:219-224 (1975).

<3667>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N,N,alpha-trimethyl-1H-
CHEMICAL COMMON NAME: U-27,267
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 0.56, 0.84, and 1.68 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: In direct-seeded tomato preplant application, moderate control of weeds with slight tomato

<3667> CONT.
phytotoxicity
COMMENTS: Metribuzin, napropamide, and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<3668>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N,N,alpha-trimethyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3669>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N,N,alpha-trimethyl-1H-
CHEMICAL COMMON NAME: U-27267
PLANT: Pepper, hot (CAPSICUM ANNUUM); Santa Maria (PARTHENIUM HYSTEROPHORUS); Nutsedge, purple (CYPERUS ROTUNDUS); (CLEOME CILIATA); (BOERHAVIA DIFFUSA); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); Pinkroot (SPIGELIA ANTHELMIA); Junglerice (ECHINOCHLOA COLONUM); Wiregrass (ELEUSINE INDICA); Sandbur (CENCHRUS ECHINATUS)
EXPERIMENTAL DOSE: 4 kg/ha
APPLICATION METHODS: Preplanting incorporated treatment
EXPERIMENTAL CONDITIONS: Seed bed trial; application 3 days before sowing
EFFECTS: Excellent weed control with some crop damage
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<3670>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N,N,alpha-trimethyl-1H-
CHEMICAL COMMON NAME: U-27267
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 3.0 kg/ha
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Moderate control of weeds with little adverse effect on peanuts; G formulation slightly more active than EC
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit further testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<3671>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N,N,alpha-trimethyl-1H-
CHEMICAL COMMON NAME: U-27267
PLANT: Pigweed (AMARANTHUS sp.); Purslane, common (PORTULACA OLERACEA); Santa Maria (PARTHENIUM HYSTEROPHORUS); (PHYLLANTHUS AMARUS); Wiregrass (ELEUSINE INDICA); Junglerice (ECHINOCHLOA COLONUM); St. John's-wort (HYPERICUM CALYCINUM)G; Nutsedge, purple (CYPERUS ROTUNDUS); Beet, sugar (BETA VULGARIS); Groundnut (PANAX TRIFOLIUM); Tomato (LYCOPERSICON ESCULENTUM); Aubergine; Tobacco (NICOTIANA TABACUM); Pepper, hot (CAPSICUM ANNUUM); Soybean (GLYCINE MAX); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 2.0 and 4.0 kg/ha
APPLICATION METHODS: Preplanting and preemergence treatments
EXPERIMENTAL CONDITIONS: Loam soil; non-field experiments
EFFECTS: Preplanting 2.0 and 4.0 kg/ha--beet, groundnut, tomato, hot pepper, and soybean safe, aubergine, tobacco, and snapbeans unsafe, very good weed control; preemergence 2.0 kg/ha--groundnut, snapbean, tomato, hot pepper, and soybean safe, aubergine, tobacco, and beet unsafe, good weed control; preemergence 4.0 kg/ha--groundnut, snapbean, and hot pepper safe, tomato, soybean, aubergine, tobacco, and beet unsafe, very good weed control
COMMENTS: Promising herbicides from these studies tested in field
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<3672>
<3672>
CHEMICAL NAME: Pyrazole-1-acetamide, 3,4,5-tribromo-N,N'-diethyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in preemergence application and no damage in postemergence application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3673>
CHEMICAL NAME: Pyrazole-1-acetamide, 4-chloro-N,N,diethyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3674>
CHEMICAL NAME: Pyrazole-1-acetamide,3,4-dibromo-N,N,alpha-trimethyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3675>
CHEMICAL NAME: Pyrazole-1-acetamide,3,4,5-tribromo-alpha-butyl-N,N-dimethyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3676>
CHEMICAL NAME: Pyrazole-1-acetamide,3,4,5-tribromo-alpha-butyl-N,N-dipropyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: No damage in preemergence application and slight damage in postemergence
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3677>
CHEMICAL NAME: Pyrazole-1-acetamide,3,4,5-tribromo-N,alpha-dimethyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in preemergence application and slight damage in postemergence
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
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<3678>
CHEMICAL NAME: Pyrazole-1-acetamide,3,5-dibromo-N,N,alpha-trimethyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
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<3679>
CHEMICAL NAME: Pyrazole-1-acetic acid, 1H-, 3,4,5-tribromo-ethyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
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<3680>
CHEMICAL NAME: Pyrazole-1-acetic acid, 1H-, 3,4,5-tribromo-ethyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
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<3681>
CHEMICAL NAME: Pyrazole-1-acetic acid, 1H-,ethyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
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<3682>
<3682>
CHEMICAL NAME: Pyrazole-1-acetic acid, 1H-,4-chloro-alpha-methyl-ethyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in preemergence application and slight damage in postemergence
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
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<3683>
CHEMICAL NAME: Pyrazole-1-acetic acid, 1H-,4-chloro-ethyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in preemergence application and no damage in postemergence
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
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<3684>
CHEMICAL NAME: Pyrazole-1-acetic acid, 3,4-dibromo-alpha-methyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
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<3685>
CHEMICAL NAME: Pyrazole-1-acetic acid, 3,4-dibromo-alpha-methyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3686>
CHEMICAL NAME: Pyrazole-1-acetic acid, 3,4,5-tribromo-alpha-(1-methylethyl)-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: No damage in either application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3687>
CHEMICAL NAME: Pyrazole-1-acetic acid, 3,4,5-tribromo-alpha-butyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: No damage in either application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3688>
CHEMICAL NAME: Pyrazole-1-acetic acid, 3,4,5-tribromo-alpha-ethyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3689>
CHEMICAL NAME: Pyrazole-1-acetic acid, 3,4,5-tribromo-alpha-methyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3690>
CHEMICAL NAME: Pyrazole-1-acetic acid, 3,4,5-tribromo-alpha-methyl-1H-
PLANT: Alfalfa (MEDICAGO SATIVA); Tomato (LYCOPERSICON ESCULENTUM); Millet, foxtail (SETARIA ITALICA); Morningglory, tall (IPOMOEA PURPUREA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Johnson grass (SORGHUM HALEPENSE); Morningglory, tall (IPOMOEA PURPUREA); Barley (HORDEUM VULGARE); Oat (AVENA SATIVA); Dichondra (DICHONDRA REPENS); Nutsedge, purple (CYPERUS ROTUNDUS); Oat, wild (AVENA FATUA); Cabbage (BRASSICA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Broadleaf weeds; Bindweed, field (CONVOLVULUS ARVENSIS); Nightshade, black (SOLANUM NIGRUM); Quackgrass (AGROPYRON REPENS); Pepper (CAPSICUM FRUTESCENS); Foxtail, green (SETARIA VIRIDIS); Grasses; Nutsedge, yellow (CYPERUS ESCULENTUS); Jimsomweed (DATURA STRAMONIUM); Blackgrass (ALOPECURUS MYOSUROIDES)
EXPERIMENTAL DOSE: 0.1 to 100 micro M
APPLICATION METHODS: Postemergence spray (assumed)
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as concentration causing 50% inhibition of root and shoot growth
EFFECTS: Generally moderate damage to broadleaf plants and grasses although some broadleaf more susceptible; roots on average somewhat more inhibited than shoots
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3691>
CHEMICAL NAME: Pyrazole-1-acetic acid, 3,4,5-tribromo-alpha-methyl-1H-
CHEMICAL COMMON NAME: U-29722
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth

<3691>
<3691> CONT.
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<3692>
CHEMICAL NAME: Pyrazole-1-acetic acid, 3,4,5-tribromo-alpha-octyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3693>
CHEMICAL NAME: Pyrazole-1-acetic acid, 3,4,5-tribromo-alpha-pentyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in postemergence application but no damage in preemergence
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3694>
CHEMICAL NAME: Pyrazole-1-acetic acid, 3,4,5-tribromo-alpha-propyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3695>
CHEMICAL NAME: Pyrazole-1-acetic acid, 3,4,5-tribromo-1H-
CHEMICAL COMMON NAME: U-27658
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 0.1 to 10.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<3696>
CHEMICAL NAME: Pyrazole-1-acetic acid, 3,5-dibromo-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree

<3696> CONT.
of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3697>
CHEMICAL NAME: Pyrazole-1-acetic acid, 4-bromo-alpha-methyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3698>
CHEMICAL NAME: Pyrazole-1-acetic acid, 4-bromo-alpha-methyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3699>
CHEMICAL NAME: Pyrazole-1-acetic acid, 4-chloro-alpha-methyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3700>
CHEMICAL NAME: Pyrazole-1-acetic acid, 4-chloro-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in preemergence application and no damage in postemergence
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3701>
CHEMICAL NAME: Pyrazole-1-acetic acid,1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree

<3701>
<3701> CONT.
of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3702>
CHEMICAL NAME: Pyrazole-1-acetic acid,1H-,alpha-methyl-ethyl ester
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3703>
CHEMICAL NAME: Pyrazole-1-acetonitril, 3,4,5-tribromo-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3704>
CHEMICAL NAME: Pyrazole-1-butanoic acid, 3,4,5-tribromo-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3705>
CHEMICAL NAME: Pyrazole-1-ethanol, 3,4-dibromo-beta-methyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3706>
CHEMICAL NAME: Pyrazole-1-ethanol, 3,4-dibromo-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree

<3706> CONT.
of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3707>
CHEMICAL NAME: Pyrazole-1-ethanol, 3,4,5-tribromo-, acetate (ester)-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3708>
CHEMICAL NAME: Pyrazole-1-ethanol, 3,4,5-tribromo-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in both application types
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3709>
CHEMICAL NAME: Pyrazole-1-propanoic acid, 3,4,5-tribromo-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Slight damage in both types of application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3710>
CHEMICAL NAME: Pyrazole, 3,4,5-tribromo-1-ethyl-1H-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: No damage in either application
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity and in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3711>
CHEMICAL NAME: Pyrazolium, 1,2-dimethyl-3,5-diphenyl-1H-
CHEMICAL COMMON NAME: Difenzoquat
PLANT: Oat, wild (AVENA FATUA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.62, 0.75, and 1.00 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; trials in 5 states (ND, MN, SD, MT, and CO)
EFFECTS: Effective control of wild oats in most attempts with no adverse effect on wheat yield
COMMENTS: Excellent wild oat control obtained in 49 out of 57 difenzoquat tests; application of MCPA, MCPA + bromoxynil, or bromoxynil in tank-mix combinations with difenzoquat did not affect control of wild oats,

<3711>
<3711> CONT.
nor was performance of broadleaf herbicides affected; aerial and ground applications of difenzoquat equally effective in wild oat control
REFERENCE: Weis, M.E., E.M. Jorgenson, C.B. Wingfield, and T. Wang, "Wild Oat Control in Barley With Difenzoquat Alone and in Combination With Broadleaf Herbicides During 1975 Under an EPA Experimental Permit," Proc. Northcent. Weed Contr. Conf. 30:106-109 (1975).

<3712>
CHEMICAL NAME: Pyrazolium, 1,2-dimethyl-3,5-diphenyl-1H-
CHEMICAL COMMON NAME: Difenzoquat
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Timothy (PHLEUM PRATENSE); Speedwell, creeping (VERONICA FILIFORMIS); Fescue (FESTUCA PRATENSIS)
EXPERIMENTAL DOSE: 1.0 and 3.0 kg/ha
APPLICATION METHODS: Postemergence spray; 337 l./ha at 2.07 bars pressure with Tee jets
EXPERIMENTAL CONDITIONS: Field study; applied at 2-3 leaf stage and tillering
EFFECTS: Slight damage to all grasses at both growth-stage applications at normal rate (1.0 kg/ha)
COMMENTS: All varieties susceptible to isoproturon, except at tillering stage, and to difenzoquat; perennial and Italian ryegrass varieties resistant to all other herbicides; all high-rate applications, and normal rate of difenzoquat, checked timothy
REFERENCE: Oswald, A.K. and R.J. Hagger, "The Tolerance of Ten Grass Varieties to Six Herbicides With a Potential for Wild Oat Control in Herbage Seed Crops," Proc. 12th. Br. Weed Cont. Conf. 2:715-722 (1974).

<3713>
CHEMICAL NAME: Pyrazolium, 1,2-dimethyl-3,5-diphenyl-1H-
CHEMICAL COMMON NAME: Difenzoquat
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Timothy (PHLEUM PRATENSE); Cocksfoot; Fescue (FESTUCA PRATENSIS)
EXPERIMENTAL DOSE: 1.0 and 3.0 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: All grasses resistant to damage at normal (lower) rate
COMMENTS: Isoproturon caused severe damage to all grasses except when sprayed 8 weeks after cereal harvest; established cock's-foot notably resistant; difenzoquat damaged all grasses even when established, while ethofumesate checked establishing grasses sown in August; none of the other herbicides affected the perennial and Italian rye-grasses; timothy most susceptible, especially to herbicides applied at high doses
REFERENCE: Oswald, A.K., "The Effects of Six Herbicides With a Potential for Wild-Oat Control on Ten Direct and Undersown Grasses," Proc. 1976 Br. Crop Protection Conf. 3:989-999 (1976).

<3714>
CHEMICAL NAME: Pyrazolium, 1,2-dimethyl-3,5-diphenyl-1H-
CHEMICAL COMMON NAME: Difenzoquat
PLANT: Blackgrass (ALOPECURUS MYOSUROIDES); Oat, wild (AVENA LUDOVICIANA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1.25 and 2.50 kg/ha; 65% WP
APPLICATION METHODS: Foliar spray; 250 l./ha at 2.0 bars pressure
EXPERIMENTAL CONDITIONS: Field study; time period--1974 to 1976; 3 locations
EFFECTS: Good control of A. LUDOVIANA and no effect on A. MYOSUROIDES at 1.25 kg/ha with slight crop damage at 2.5 kg/ha
COMMENTS: Effectiveness of treatments on mixed populations varied, and some herbicides antagonistic to one another in mixture; most consistent mixture was 2.0 kg/ha isoproturon with 0.5 kg/ha difenzoquat which when applied in autumn controlled all three grass weeds
REFERENCE: Holroyd, J. and M.E. Thornton, "Herbicides and Herbicide Mixtures for the Control of AVENA FATUA, A. LUDOVICIANA, and ALOPECURUS MYOSOROIDES in Winter Cereals," Proc. 1976 Brit. Crop Prot. Conf.-Weeds, 1:103-110 (1976).

<3715>
CHEMICAL NAME: Pyrazolium,1,2-dimethyl-3,5-diphenyl-1H-
CHEMICAL COMMON NAME: Difenzoquat
PLANT: Wheat (TRITICUM sp.); Barley (HORDEUM VULGARE); Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.5, 0.75, 1.0, and 1.25 kg/ha
APPLICATION METHODS: Postemergence spray at 220 to 316 l./ha water; 5 ml/l. of surfactant 'Teric GN9' or 7 ml/l. of surfactant 'Agral LN' added
EXPERIMENTAL CONDITIONS: Randomized block design with 4 replications; field studies; benzoylprop-ethyl used as standard
EFFECTS: Good wild oat control especially at 1.0 and 1.25 kg/ha; wheat yields increased compared to control; barley yields not significantly different from control; performance equivalent to benzoylprop-ethyl
COMMENTS: Low wild oat numbers in barley trials, thus test became barley tolerance and not weed control; wild oat control greater when plants at 5-leaf stage--no residual effect so the bigger the crop plants when wild oat killed ensures less regrowth
REFERENCE: Logan, I.C., "Difenzoquat for Wild Oat Control in Cereals," Proc. N.Z. Weed Pest Control Conf. 28:181-184 (1975).

<3716>
CHEMICAL NAME: Pyrazolium,1,2-dimethyl-3,5-diphenyl-1H-
CHEMICAL COMMON NAME: Difenzoquat
PLANT: Oat, wild (AVENA LUDOVICIANA); Foxtail, slender (ALOPECURUS MYOSUROIDES); Wheat (TRITICUM sp.)
EXPERIMENTAL DOSE: 0.80 kg/ha
APPLICATION METHODS: Postemergence spray in 600 l./ha water at a pressure of 2 kg/cm(2)
EXPERIMENTAL CONDITIONS: Trial 1--wild oat and foxtail seeded artifically at rates of 0, 130, 260, and 390 seeds/m(2), wheat sown at rate of 500 seeds/m(2), split plot design with 4 replicates; trial 2--2 x 2 m

<3716> CONT.
plots marked off in existing wheat crop, natural infestation of wild oats, randomized block design with 4 replicates, 3 appliation times (early, normal, and late)
EFFECTS: Trial 1--mean dry weight of 4.2 g/ha compared to check dry weight of 101.8 g/ha for wild oat, foxtail mean dry weight was 26.7 g/ha compared to 21.7 g/ha for check, wheat yield increased compared to check; trial 2--88.8, 95.7, and 97.1% reduction in wild oat stems when treated early, normal, and late respectively, minor wheat phytotoxicity observed with late application
COMMENTS: Check in trial 1 sown the same as treated plots
REFERENCE: Catizone, P., "Trials on Wild Oat (AVENA LUDOVICIANA, DURIEU) Control in Winter Wheat Comparing New Herbicides," Proc. Brit. Weed Control Conf. 12:45-52 (1974).

<3717>
CHEMICAL NAME: Pyrazolium,1,2-dimethyl-3,5-diphenyl-1H-
CHEMICAL COMMON NAME: Difenzoquat
PLANT: Oat, wild (AVENA FATUA); Oat (AVENA SATIVA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 0.33, 0.67, 1.1, 1.35, and 2.71 kg/ha
APPLICATION METHODS: Trial 1--postemergence spray at 3.164 kg/cm(2) pressure and low volume rate, early and late application approximately 3 weeks apart; trial 2--logarithmic applications of 0.33, 0.67, 1.35, and 2.71 kg/ha, applied when leaf sheath lengthened
EXPERIMENTAL CONDITIONS: Trial 1--studies on oat control in commercial ryegrass fields, 3 X 10 m plots in 3 randomized plots, 2 test sites; trial 2--ryegrass tolerance tests, sandy loam soil, logarithmic treatments of 2.71 kg/ha and 1/2, 1/4, and 1/8 of 2.71 kg/ha.
EFFECTS: Trial 1--late application (April 4) gave moderate A. FATUA and good A. SATIVA control at both early and late treatments; trial 2--at 2.71 kg/ha 2 varieties of ryegrass were tolerant and 1 sensitive, at smaller doses sensitivity decreased
COMMENTS: Errors in early application tests (trial 1) discounted results
REFERENCE: Mead, H., B.L. Ross, and R.J. Finch, "Preliminary Investigations on the Control of Wild-Oat (AVENA FATUA L.) Cultivated Oak (AVENA SATIVA L.) and Blackgrass (ALOPECURUS MYOSUROIDES HUDS.) in Seed Crops of Various Varieties of Perennial and Italian Ryegrass," Proc. Brit. Weed Control Conf. 12(2):707-714 (1974).

<3718>
CHEMICAL NAME: Pyrazolo [1,5-a]pyrimidine-6-carboxylic acid, 2-[(diethoxyphosphinothioyl)oxy]-5-methyl-, ethyl ester
CHEMICAL COMMON NAME: Pyrazophos
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 0.016%; 30% EC
APPLICATION METHODS: Postemergence spray for control of fungal disease; 200 gal/A; sprayed to run-off
EXPERIMENTAL CONDITIONS: Field study; established orchards; time period--1967 to 1970; trees shielded during spraying
EFFECTS: Increased fruit damage (russeting) of most but not all varieties; alleviated to some extent with Urbacid or captan
COMMENTS: New compounds increased fruit russet and reduced crop and fruit size on several cultivars; important amelioration of russet achieved in some instances by adding Urbacid or captan to sprays
REFERENCE: Butt, D.J., A.H.M. Kirby, and C.J. Williamson, "Fungitoxic and Phytotoxic Effects of Fungicides Controlling Powdery Mildew on Apple," Ann. Appl. Biol. 75(2):217-228 (1973).

<3719>
CHEMICAL NAME: Pyrazolo[5,1-a]isoindol-8-one, 3,3a-dihydro-2-(4-methoxyphenyl)-8H-
CHEMICAL COMMON NAME: DPX-1940
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 1.2 kg/ha
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Moderate control of weeds and no adverse effects on peanut vigor; in cracking application, effective weed control and slight vigor reduction in peanuts
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit futher testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<3720>
CHEMICAL NAME: PYRICULARIA toxins
CHEMICAL COMMON NAME: PYRICULARIA toxin
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: Not applicable; concentration of toxins not determined
APPLICATION METHODS: Soak in eluate solutions
EXPERIMENTAL CONDITIONS: Laboratory study; germinated rice seed placed in eluates from PYRICULARIA spp. isolate from varied plant hosts
EFFECTS: Reduced growth of rice seedlings and leaf necrosis
COMMENTS: Number of phytotoxic components including pyriculol detected; apparently reduced form of pyriculol also detected in toxic eluates of chromatograms
REFERENCE: Rao, A.N. and S. Suryanarayanan, "Studies on the Toxins of PYRICULARIA spp. - the Phytotoxicity of Culture Filtrates," Proc. Indian Acad. Sci. 82B(3):77-91 (1975).

<3721>
<3721>
CHEMICAL NAME: Pyridazine, 3-([1,1'-biphenyl]-2-yloxy-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--50-75% inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3722>
CHEMICAL NAME: Pyridazine, 3-([1,1'-biphenyl]-2-yloxy-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS); Spikerush (ELEOCHARTS ACICULARIS); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 30 ppm and 250 g/10A
APPLICATION METHODS: Barnyard grass and Taisai seeds treated; postemergent treatment to all except Taisai
EXPERIMENTAL CONDITIONS: Germination test--barnyard grass and Taisai seeds exposed to 30 ppm; submerged pot test--barnyard grass seeds added and seedlings of rice and spikerush transplanted to each pot after barnyard grass germination test solution applied to each pot at 250 g/10A rate, observations 3 weeks later
EFFECTS: Germination test--barnyard grass completely inhibited, 30-60% Taisai inhibition; submerged pot test--barnyard grass completely killed, less than 25% spikerush inhibition, no rice inhibition
REFERENCE: Tamura, S., T. Jojima, K. Kawakubo, K. Nakamura, and T. Takematsu, "3-Phenoxypridazine as a New Selective Herbicide," Agric. Biol. Chem. 30(4):423-424 (1966).

<3723>
CHEMICAL NAME: Pyridazine, 3-([1,1'-biphenyl]-3-chloro-4-yloxy-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--0% inhibition at 30 ppm, 0% at 300 ppm; Taisai--0% inhibition at 30 ppm, 0% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3724>
CHEMICAL NAME: Pyridazine, 3-(2-butylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--100% inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3725>
CHEMICAL NAME: Pyridazine, 3-(2-chlorophenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--25-50% inhibition at 30 ppm, 75% or greater at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3726>
CHEMICAL NAME: Pyridazine, 3-(2-ethylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--50-75% inhibition at 30 ppm, 75% or greater at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3727>
CHEMICAL NAME: Pyridazine, 3-(2-heptylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--50-75% inhibition at 30 ppm, 75% or greater at 300 ppm; Taisai--50-75% inhibition at 30 ppm, 75% or greater at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3728>
CHEMICAL NAME: Pyridazine, 3-(2-methoxyphenoxy)-6-methylthio-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--0% stem and 30-60% root at 1000 ppm; radish (3 weeks)--50-75% at 300 and 75% or greater at 1000 ppm; millet (3 days)--0% stem and 60% or greater root at 300 and 1000 ppm; millet (3 weeks)--25-50% at 300 ppm and 50-75% at 1000 ppm, Foliar injury
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3729>
CHEMICAL NAME: Pyridazine, 3-(2-methylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--plants killed or 100% inhibition at 30 ppm, 100% inhibition or plants killed at 300 ppm; Taisai--25% or less inhibition at 30 ppm, 75% or greater at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3730>
CHEMICAL NAME: Pyridazine, 3-(2-methylphenoxy)-
CHEMICAL COMMON NAME: Credazine
PLANT: Bean, snap (PHASEOLUS VULGARIS); Bluegrass, annual (POA ANNUA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Fumitory, common (FUMARIA OFFICINALIS)
EXPERIMENTAL DOSE: 1.25 lb/A
APPLICATION METHODS: Postemergence spray at a volume of 40 gpa
EXPERIMENTAL CONDITIONS: Randomized block design with 4 replications; 20-30 sq yd plot size; plant and weed counts as well as visual assessments made
EFFECTS: Bean crop moderately injured; 13, 22, and 0% kill of P. ANNUA, C. BURSA-PASTORIS, and F. OFFICINALIS
REFERENCE: Cassidy, J.C., "Herbicide Evaluation in Peas and French Beans 1971-72," Proc. Brit. Weed Control Conf. 11:1088-1095 (1972).

<3731>
<3731>
CHEMICAL NAME: Pyridazine, 3-(2-propylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--50-75% inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3732>
CHEMICAL NAME: Pyridazine, 3-(2,3-dimethylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--75% or greater inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3733>
CHEMICAL NAME: Pyridazine, 3-(2,3,5-trimethylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--25-50% inhibition at 30 ppm, 50-75% at 300 ppm; Taisai--25% or less inhibition at 30 ppm, 75% or greater at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3734>
CHEMICAL NAME: Pyridazine, 3-(2,4-dichloro-6-methylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--50-75% inhibition at 30 ppm, 75% or greater at 300 ppm; Taisai--25% or less inhibition at 30 ppm, 50-75% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3735>
CHEMICAL NAME: Pyridazine, 3-(2,4-dichlorophenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--25-50% inhibition at 30 ppm, 75-100% at 300 ppm; Taisai--0% inhibition at 30 ppm, 75% or greater at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3736>
CHEMICAL NAME: Pyridazine, 3-(2,4-dichlorophenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS); Spikerush (ELEOCHARIS ACICULARIS); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 30 ppm and 250 g/10A
APPLICATION METHODS: Barnyard grass and Taisai seeds treated; postemergent treatment to all except Taisai
EXPERIMENTAL CONDITIONS: Germination test--barnyard grass and Taisai seeds exposed to 30 ppm; submerged pot test--barnyard grass seeds added and seedlings of rice and spikerush transplanted to each pot after barnyard grass germination test solution applied to each pot at 250 g/10A rate, observations 3 weeks later
EFFECTS: Germination test--30% or lower barnyard grass inhibition, no Taisai inhibition; submerged pot test--barnyard grass completely killed, 50-75% spikerush inhibition, no rice inhibition
REFERENCE: Tamura, S., T. Jojima, K. Kawakubo, K. Nakamura, and T. Takematsu, "3-Phenoxypridazine as a New Selective Herbicide," Agric. Biol. Chem. 30(4):423-424 (1966).

<3737>
CHEMICAL NAME: Pyridazine, 3-(2,4-dichlorophenoxy)-6-methoxy-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--0%; radish (3 weeks)--0%; millet (3 days)--0%; millet (3 weeks)--0%
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3738>
CHEMICAL NAME: Pyridazine, 3-(2,4-dimethylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--75% or greater inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3739>
CHEMICAL NAME: Pyridazine, 3-(2,4,5-trichlorophenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--75% or greater inhibition at 30 ppm, 100% at 300 ppm; Taisai--25-50% inhibition at 30 ppm, 75% or greater at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3740>
CHEMICAL NAME: Pyridazine, 3-(2,4,6-trichlorophenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--50-75% inhibition at 30 ppm, 75-100% at 300 ppm; Taisai--0% inhibition at 30 ppm, 75% or greater at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3741>
<3741>
CHEMICAL NAME: Pyridazine, 3-(2,5-dimethylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--50-75% inhibition at 30 ppm, 75% or greater at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3742>
CHEMICAL NAME: Pyridazine, 3-(2,6-dichlorophenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--75% or greater inhibition at 30 ppm, 100% at 300 ppm; Taisai--25% or less inhibition at 30 ppm, 75-100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3743>
CHEMICAL NAME: Pyridazine, 3-(2,6-dimethylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--50-75% inhibition at 30 ppm, 100% at 300 ppm; Taisai--50-75% inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3744>
CHEMICAL NAME: Pyridazine, 3-(3-chlorophenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--75% or greater inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3745>
CHEMICAL NAME: Pyridazine, 3-(3-chlorophenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS); Spikerush (ELEOCHARIS ACICULARIS); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 30 ppm and 250 g/10A
APPLICATION METHODS: Barnyard grass and Taisai seeds treated; postemergent treatment to all except Taisai
EXPERIMENTAL CONDITIONS: Germination test--barnyard grass and Taisai seeds exposed to 30 ppm; submerged pot test--barnyard grass seeds added and seedlings of rice and spikerush transplanted to each pot after barnyard grass germination test solution applied to each pot at 250 g/10A rate, observations 3 weeks later
EFFECTS: Germination test--complete barnyard grass inhibition, 60% or higher Taisai inhibition; submerged pot test--barnyard grass completely killed, 75% spikerush inhibition, no rice inhibition
REFERENCE: Tamura, S., T. Jojima, K. Kawakubo, K. Nakamura, and T. Takematsu, "3-Phenoxypridazine as a New Selective Herbicide," Agric. Biol. Chem. 30(4):423-424 (1966).

<3746>
CHEMICAL NAME: Pyridazine, 3-(3-methylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--plants killed or 100% inhibition at 30 ppm, plants killed or 100% inhibition at 300 ppm; Taisai--0% inhibition at 30 ppm, 75-100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3747>
CHEMICAL NAME: Pyridazine, 3-(3-methylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS); Spikerush (ELEOCHARIS ACICULARIS); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 30 ppm and 250 g/10A
APPLICATION METHODS: Barnyard grass and Taisai seeds treated; postemergent treatment to all except Taisai
EXPERIMENTAL CONDITIONS: Germination test--barnyard grass and Taisai seeds exposed to 30 ppm; submerged pot test--barnyard grass seeds added and seedlings of rice and spikerush transplanted to each pot after barnyard grass germination test solution applied to each pot at 250 g/10A rate, observations 3 weeks later
EFFECTS: Germination test--100% barnyard grass inhibition, no Taisai inhibition; submerged pot test--barnyard grass completely killed, spikerush almost completely killed, no rice inhibition
REFERENCE: Tamura, S., T. Jojima, K. Kawakubo, K. Nakamura, and T. Takematsu, "3-Phenoxypridazine as a New Selective Herbicide," Agric. Biol. Chem. 30(4):423-424 (1966).

<3748>
CHEMICAL NAME: Pyridazine, 3-(3-nitrophenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--25% or less inhibition at 30 ppm, 25-50% at 300 ppm; Taisai--0% inhibition at 30 ppm, 75% or greater at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3749>
CHEMICAL NAME: Pyridazine, 3-(3-nitrophenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS); Spikerush (ELEOCHARIS ACICULARIS); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 30 ppm and 250 g/10A
APPLICATION METHODS: Barnyard grass and Taisai seeds treated; postemergent treatment to all except Taisai
EXPERIMENTAL CONDITIONS: Germination test--barnyard grass and Taisai seeds exposed to 30 ppm; submerged pot test--barnyard grass seeds added and seedlings of rice and spikerush transplanted to each pot after barnyard grass germination test solution applied to each pot at 250 g/10A rate, observations 3 weeks later
EFFECTS: Germination test--30% or lower barnyard grass inhibition, no Taisai inhibition; submerged pot test--no inhibition
REFERENCE: Tamura, S., T. Jojima, K. Kawakubo, K. Nakamura, and T. Takematsu, "3-Phenoxypridazine as a New Selective Herbicide," Agric. Biol. Chem. 30(4):423-424 (1966).

<3750>
CHEMICAL NAME: Pyridazine, 3-(3,4-dimethylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--75% or greater inhibition at 30 ppm, 100% at 300 ppm; Taisai--0% inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3751>
<3751>
CHEMICAL NAME: Pyridazine, 3-(4-bromophenoxy)-6-chloro-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 and 1000 ppm; radish (3 weeks)--75% or greater at 100 ppm, seedlings killed at 300 and 1000 ppm; millet (3 days)--30% or less stem and 30-60% root at 1000 ppm; millet (3 weeks)--25-50% at 300 ppm, 50-75% at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3752>
CHEMICAL NAME: Pyridazine, 3-(4-chloro-2-methylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--75% or greater inhibition at 30 ppm, 100% at 300 ppm; Taisai--25-50% inhibition at 30 ppm, 50-75% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3753>
CHEMICAL NAME: Pyridazine, 3-(4-chloro-3-methylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--25-50% inhibition at 30 ppm, 75-100% at 300 ppm; Taisai--50-75% inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3754>
CHEMICAL NAME: Pyridazine, 3-(4-chloro-3-methylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS); Spikerush (ELEOCHARIS ACICULARIS); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 30 ppm and 250 g/10A
APPLICATION METHODS: Barnyard grass and Taisai seeds treated; postemergent treatment to all except Taisai
EXPERIMENTAL CONDITIONS: Germination test--barnyard grass and Taisai seeds exposed to 30 ppm; submerged pot test--barnyard grass seeds added and seedlings of rice and spikerush transplanted to each pot after barnyard grass germination test solution applied to each pot at 250 g/10A rate, observations 3 weeks later
EFFECTS: Germination test--30% or lower barnyard grass inhibition, 30-60% Taisai inhibition; submerged pot test--barnyard grass completely killed, 50% or lower spikerush inhibition, no rice inhibition
REFERENCE: Tamura, S., T. Jojima, K. Kawakubo, K. Nakamura, and T. Takematsu, "3-Phenoxypridazine as a New Selective Herbicide," Agric. Biol. Chem. 30(4):423-424 (1966).

<3755>
CHEMICAL NAME: Pyridazine, 3-(4-chlorophenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--25-50% inhibition at 30 ppm, 100% at 300 ppm; Taisai--0% inhibition at 30 ppm, 75% or greater at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3756>
CHEMICAL NAME: Pyridazine, 3-(4-methoxyphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--0% inhibition at 30 ppm, 25-50% at 300 ppm; Taisai--0% inhibition at 30 ppm, 50-75% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3757>
CHEMICAL NAME: Pyridazine, 3-(4-methoxyphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS); Spikerush (ELEOCHARIS ACICULARIS); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 30 ppm and 250 g/10A
APPLICATION METHODS: Barnyard grass and Taisai seeds treated; postemergent treatment to all except Taisai
EXPERIMENTAL CONDITIONS: Germination test--barnyard grass and Taisai seeds exposed to 30 ppm; submerged pot test--barnyard grass seeds added and seedlings of rice and spikerush transplanted to each pot after barnyard grass germination test solution applied to each pot at 250 g/10A rate, observations 3 weeks later
EFFECTS: Germination test--no barnyard grass or Taisai inhibition; submerged pot test--25% or less barnyard grass killed, no spikerush or rice inhibition
REFERENCE: Tamura, S., T. Jojima, K. Kawakubo, K. Nakamura, and T. Takematsu, "3-Phenoxypridazine as a New Selective Herbicide," Agric. Biol. Chem. 30(4):423-424 (1966).

<3758>
CHEMICAL NAME: Pyridazine, 3-(4-methylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--25-50% inhibition at 30 ppm, 100% at 300 ppm; Taisai--0% inhibition at 30 ppm, 50-75% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3759>
CHEMICAL NAME: Pyridazine, 3-(4-nitrophenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--25% or less inhibition at 30 ppm, 25-50% at 300 ppm; Taisai--0% inhibition at 30 ppm, 75% or greater at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3760>
CHEMICAL NAME: Pyridazine, 3-(6-chloro-2-methylphenoxy)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--50-75% inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3761>
<3761>
CHEMICAL NAME: Pyridazine, 3-[2-(1-methylethyl)phenoxy]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--25-50% inhibition at 30 ppm, 75% or greater at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3762>
CHEMICAL NAME: Pyridazine, 3-[2-(1-methylpropyl)phenoxy]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--50-75% inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3763>
CHEMICAL NAME: Pyridazine, 3-[2-(1,1-dimethylethyl)phenoxy]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--25-50% inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3764>
CHEMICAL NAME: Pyridazine, 3-[2-methyl-5(1-methylethyl)phenoxy]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--75% or greater inhibition at 30 ppm, 100% at 300 ppm; Taisai--75% or greater inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3765>
CHEMICAL NAME: Pyridazine, 3-[3-methyl-4(1-methylethyl)phenoxy]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--25% or less inhibition at 30 ppm, 25-50% at 300 ppm; Taisai--0% inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3766>
CHEMICAL NAME: Pyridazine, 3-[3-methyl-4(1-methylpropyl)phenoxy]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--50-75% inhibition at 30 ppm, 100% at 300 ppm; Taisai--25-50% inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3767>
CHEMICAL NAME: Pyridazine, 3-[4-(1,1-dimethylethyl)phenoxy]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--0% inhibition at 30 ppm, 25% or less at 300 ppm; Taisai--25% or less inhibition at 30 ppm, 50-75% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3768>
CHEMICAL NAME: Pyridazine, 3-[5-methyl-2(1-methylethyl)phenoxy]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--75% or greater inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3769>
CHEMICAL NAME: Pyridazine, 3-[5-methyl-2(1-methylpropyl)phenoxy]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--100% inhibition at 30 ppm, 100% at 300 ppm; Taisai--75% or greater inhibition at 30 ppm, 100% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3770>
CHEMICAL NAME: Pyridazine, 3-butoxy-6-chloro-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30-60% at 30 and 100 ppm, 100% at 300 and 1000 ppm; radish (3 weeks)--25-50% at 300 ppm, 50-75% at 1000 ppm; millet (3 days)--30-60% at 100 ppm, 100% at 300 and 1000 ppm, millet (3 weeks)--75% or greater at 300 ppm, no germination at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3771>
<3771>
CHEMICAL NAME: Pyridazine, 3-chloro-6-([1,1'-biphenyl]-2-yloxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less stem at 1000 ppm, 60% or greater root at 1000 ppm; radish (3 weeks)--seedlings killed at 30 ppm; millet (3 days)--30% or less stem at 1000 ppm, 30-60% root at 1000 ppm; millet (3 weeks)--no germination at 100 ppm
COMMENTS: Percentages refer to inhibition; postemergence test--60-100% radish and 30% less millet inhibition at 3000 ppm after 8 days, foliar injury recorded
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3772>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(phenyl-1-propenloxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--0% stem and 30% or less root at 1000 ppm; radish (3 weks)--0%; millet (3 days)--0%; millet (3 weeks)--0%
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3773>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(1-methylbutoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30-60% at 100 ppm, 100% at 300 and 1000 ppm; radish (3 weeks)--25% or lower at 300 ppm, 25-50% at 1000 ppm; millet (3 days)--60% or greater at 300 ppm, 100% at 1000 ppm; millet (3 weeks)--25-50% at 300 ppm, no germination at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3774>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(1-methylethoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or lower inhibition at 100 ppm, complete inhibition at 300 and 1000 ppm; radish (3 weeks)--25% or lower inhibition at 300 ppm, 25-50% at 1000 ppm; millet (3 days)--60% or higher inhibition at 300 ppm, complete inhibition at 1000 ppm; millet (3 weeks)--25-50% inhibition at 300 ppm, 75% or higher at 1000 ppm
COMMENTS: No distinction between stem and roof when same or similar inhibition (researchers do, however, list both even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3775>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(1-methylpropoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30-60% inhibition at 100 ppm, complete inhibition at 300 and 1000 ppm; radish (3 weeks)--25-50% inhibition at 300 ppm, 50-75% at 1000 ppm; millet (3 days)--30-60% inhibition at 100 ppm, complete inhibition at 300 and 1000 ppm; millet (3 weeks)--50-75% inhibition at 300 ppm, no germination at 1000 ppm
COMMENTS: No distinction between stem and roof when same or similar inhibition (researchers do, however, list both even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3776>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(2-methoxy-4-methoxyphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--100% at 300 ppm; radish (3 weeks)--25% or less at 100 ppm, seedlings killed at 300 and 1000 ppm; millet (3 days)--100% root at 100, 300, and 1000 ppm, 60% or greater stem at 300 and 1000 ppm; millet (3 weeks)--75% or greater at 300 ppm, no germination at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3777>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(2-methoxyphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater stem and 100% root at 300 and 1000 ppm; radish (3 weeks)--50-75% at 300 ppm (foliar injury), seedlings killed at 1000 ppm; millet (3 days)--60% or greater at 300 and 1000 ppm; millet (3 weeks)--25% or less at 100 ppm, seedlings killed at 300 and 1000 ppm
COMMENTS: Percentages refer to inhibition; postemergence test--slight radish and very weak millet injury at 3000 ppm 8 days after treatment, foliar injury
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3778>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(2-methylphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 ppm, 100% at 1000 ppm; radish (3 weeks)--75% or greater at 300 ppm, no germination at 1000 ppm; millet (3 days)--60% or greater at 300 and 1000 ppm; millet (3 weeks)--no germination at 100 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3779>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(2-propenyloxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--25-50% at 100 ppm, 100% at 300 and 1000 ppm; radish (3 weeks)--25% or less at 300 ppm, 25-50% at 1000 ppm; millet (3 days)--60% or greater at 300 ppm, 100% at 1000 ppm; millet (3 weeks)--0% at 300 ppm, 50-75% at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3780>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(2-propynyloxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30-60% at 100 ppm, 60% or greater at 300 ppm, 100% at 1000 ppm; radish (3 weeks)--25% or less at 1000 ppm; millet (3 days)--30-60% at 300 ppm, 100% at 1000 ppm; millet (3 weeks)--25% or less at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3781>
<3781>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(2,3,5-trimethylphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30-60% at 300 ppm, 60% or greater at 1000 ppm; radish (3 weeks)--25% or less at 300 and 1000 ppm; millet (3 days)--no stem inhibition, 30% or less root at 1000 ppm; millet (3 weeks)--50-75% at 300 ppm, 75% or greater at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3782>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(2,4-dichlorophenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30-60% stem and root at 300 ppm, 60% or greater stem and 100% root at 1000 ppm; radish (3 weeks)--25% or less at 300 ppm, 75% or greater at 1000 ppm; millet (3 days)--25% or less stem and 60% or greater root at 300 ppm, 60% or greater at 1000 ppm; millet (3 weeks)--0% at 300 ppm, 25-50% at 1000 ppm
COMMENTS: Percentages refer to inhibition; postemergence test--considerable radish and very weak millet injury at 300 ppm, millet foliage injured
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3783>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(2,4-dimethylphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30-60% at 1000 ppm; radish (3 weeks)--25% or less at 300 ppm, 50-75% at 1000 ppm; millet (3 days)--no stem inhibition, 60% or greater root at 1000 ppm; millet (3 weeks)--25% or less at 300 ppm, 50-75% at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3784>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(2,4,5-trichlorophenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--0%; radish (3 weeks)--0%; millet (3 days)--0%; millet (3 weeks)--25% or less at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3785>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(2,6-dichlorophenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 and 1000 ppm; radish (3 weeks)--seedlings killed at 30 ppm; millet (3 days)--60% or greater stem and 100% root at 300 and 1000 ppm; millet (3 weeks)--no germination at 100 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3786>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(3-methoxyphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 ppm, 100% at 1000 ppm; radish (3 weeks)--seedlings killed at 300 and 1000 ppm; millet (3 days)--30% or less stem and 100% root at 1000 ppm; millet (3 weeks)--seedlings killed at 300 and 1000 ppm
COMMENTS: Percentages refer to inhibition; postemergence test--serious radish and slight millet injury at 3000 ppm 8 days after treatment, foliar injury
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3787>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(3-methylphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 ppm, 100% at 1000 ppm; radish (3 weeks)--75% or greater at 300 ppm, no germination at 1000 ppm; millet (3 days)--60% or greater at 100 ppm, 100% at 300 and 1000 ppm; millet (3 weeks)--seedlings killed after germination of 300 ppm, no germination at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3788>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(3,4-dimethylphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less at 1000 ppm; radish (3 weeks)--0%; millet (3 days)--no stem inhibition, 30-60% root at 300 and 1000 ppm; millet (3 weeks)--0%
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3789>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(3,5-dimethylphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--no stem inhibition, 30% or less root at 1000 ppm; radish (3 weeks)--0%; millet (3 days)--no stem inhibition, 30% or less root at 1000 ppm; millet (3 weeks)--0%
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3790>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(4-chloro-3-methylphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 ppm, 100% at 1000 ppm; radish (3 weeks)--50-75% at 100 ppm (foliar injury), seedlings killed at 300 and 1000 ppm; millet (3 days)--30-60% at 300 ppm, 60% or greater at 1000 ppm; millet (3 weeks)--50-75% at 300 ppm, 75% or greater at 1000 ppm, foliar injury
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3791>
<3791>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(4-chlorophenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less stem, 30-60% root at 1000 ppm; radish (3 weeks)--50-75% at 100 ppm, seedlings killed at 1000 ppm, foliar damage; millet (3 days)--0% stem, 60% or greater root at 1000 ppm; millet (3 weeks)--25% or less at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3792>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(4-chlorophenoxyethoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 ppm, 100% at 1000 ppm; radish (3 weeks)--75% or greater at 30 ppm, no germination at 300 ppm; millet (3 days)--0% stem and 30% or less root at 300 and 1000 ppm, respectively; millet (3 weeks)--25% or less at 100 ppm, no germination at 1000 ppm
COMMENTS: Percentages refer to inhibition; postemergence test--serious radish and slight millet injury at 3000 ppm 8 days after treatment, foliar injury
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3793>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(4-ethylphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 ppm, 100% at 1000 ppm; radish (3 weeks)--25-50% at 100 ppm, no germination at 300 and 1000 ppm; millet (3 days)--60% or greater at 300 and 1000 ppm; millet (3 weeks)--50-75% at 100 ppm, no germination at 300 and 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3794>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(4-methoxyphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 ppm, 100% at 1000 ppm; radish (3 weeks)--no germination at 300 and 1000 ppm; millet (3 days)--60% or greater stem and 100% root at 300 and 1000 ppm; millet (3 weeks)--75% or greater at 300 ppm, seedlings killed at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3795>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(4-methoxyphenylmethoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less stem at 1000 ppm, 60% or greater root at 300 and 1000 ppm; radish (3 weeks)--25% or less at 1000 ppm (foliar injury); millet (3 days)--30% or less at 1000 ppm; millet (3 weeks)--25% or less at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3796>
CHEMICAL NAME: Pyridazine, 3-chloro-6-(4-methylphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30-60% at 300 ppm, 60% or greater at 1000 ppm; radish (3 weeks)--50-75% at 30 ppm, no germination at 1000 ppm; millet (3 days)--60% or greater at 100 and 300 ppm, 100% at 1000 ppm; millet (3 weeks)--50-75% at 300 ppm, no germination at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3797>
CHEMICAL NAME: Pyridazine, 3-chloro-6-[2-(1-methylethyl)phenoxy]-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30-60% of 30 and 100 ppm, 60% or greater at 300 and 1000 ppm; radish (3 weeks)--50-75% at 300 ppm, 75% or greater at 1000 ppm; millet (3 days)--60% or greater at 300 and 1000 ppm; millet (3 weeks)--50-75% at 30 and 100 ppm, no germination at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3798>
CHEMICAL NAME: Pyridazine, 3-chloro-6-dodecyloxy-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 100 ppm, 100% at 1000 ppm; radish (3 weeks)--50-75% at 300 ppm, no germination at 1000 ppm; millet (3 days)--60% or greater at 100 ppm, 60% or greater stem and 100% root at 1000 ppm; millet (3 weeks)--75% or greater at 300 ppm, no germination at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3799>
CHEMICAL NAME: Pyridazine, 3-chloro-6-ethoxy-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or lower inhibition at 100 ppm, complete inhibition at 300 and 1000 ppm; radish (3 weeks)--25-50% inhibition at 1000 ppm, 25% or lower at 300 ppm; millet (3 days)--30-60% inhibition at 300 ppm, 60% or higher at 1000 ppm; millet (3 weeks)--25% or lower inhibition at 1000 ppm
COMMENTS: No distinction between stem and root when same or similar inhibition (researchers do, however, list both even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3800>
CHEMICAL NAME: Pyridazine, 3-chloro-6-methoxy-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3-days)--30% or lower inhibition at 100 ppm, complete inhibition at 300 and 1000 ppm; radish (3 weeks)--25-50% inhibition at 1000 ppm; millet (3 days)--30-60% inhibition at 100 and 300 ppm, 60% or higher inhibition at 1000 ppm; millet (3 weeks)--no inhibition
COMMENTS: No distinction between stem and root when same or similar inhibition (researchers do, however, list both even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3801>
<3801>
CHEMICAL NAME: Pyridazine, 3-chloro-6-phenoxy-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--25-50% inhibition at 30 ppm, 100% at 300 ppm; Taisai--25% or less inhibition at 30 ppm, 50-75% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3802>
CHEMICAL NAME: Pyridazine, 3-chloro-6-phenoxy-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS); Spikerush (ELEOCHARIS ACICULARIS); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 30 ppm and 250 g/10A
APPLICATION METHODS: Barnyard grass and Taisai seeds treated; postemergent treatment to all except Taisai
EXPERIMENTAL CONDITIONS: Germination test--barnyard grass and Taisai seeds exposed to 30 ppm; submerged pot test--barnyard grass seeds added and seedlings of rice and spikerush transplanted to each pot after barnyard grass germination test solution applied to each pot at 250 g/10A rate, observations 3 weeks later
EFFECTS: Germination test--60% or higher barnyard grass inhibition, 30% or lower Taisai inhibition; submerged pot test--25% or less barnyard grass killed, 50% or less spikerush inhibition, no rice inhibition
REFERENCE: Tamura, S., T. Jojima, K. Kawakubo, K. Nakamura, and T. Takematsu, "3-Phenoxypridazine as a New Selective Herbicide," Agric. Biol. Chem. 30(4):423-424 (1966).

<3803>
CHEMICAL NAME: Pyridazine, 3-chloro-6-phenoxy-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30-60% at 300 ppm, 60% or greater at 1000 ppm; radish (3 weeks)--50-75% at 300 ppm, 75% or greater at 1000 ppm; millet (3 days)--60% or greater at 300 ppm, 100% at 1000 ppm; millet (3 weeks)--no germination at 100 ppm
COMMENTS: Postemergence--test showed considerable radish and very weak millet injury at 300 ppm 8 days after treatment; necrosis of leaves also observed pre and postemergence; percentages under effects refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers list both even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3804>
CHEMICAL NAME: Pyridazine, 3-chloro-6-phenoxyethoxy-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 and 1000 ppm; radish (3 weeks)--75% or greater at 300 ppm, no germination at 1000 ppm; millet (3 days)--30-60% at 300 and 1000 ppm; millet (3 weeks)--50-75% at 300 ppm (foliar injury), no germination at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3805>
CHEMICAL NAME: Pyridazine, 3-chloro-6-phenylmethoxy-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 ppm, 100% at 1000 ppm; radish (3 weeks)--no germination at 300 and 1000 ppm; millet (3 days)--60% or greater at 100 ppm, 100% at 1000 ppm; millet (3 weeks)--75% or greater at 300 ppm, no germination at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3806>
CHEMICAL NAME: Pyridazine, 3-chloro-6-propoxy-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30-60% inhibition at 100 ppm, complete inhibition at 300 and 1000 ppm; radish (3 weeks)--25% or lower inhibition at 300 ppm, 25-50% at 1000 ppm; millet (3 days)--30-60% inhibition at 100 ppm, 60% or higher at 300 ppm, and complete inhibition at 1000 ppm; millet (3 weeks)--50-75% inhibition at 300 ppm, 75% or higher at 1000 ppm
COMMENTS: No distinction between stem and roof when same or similar inhibition (researchers do, however, list both even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3807>
CHEMICAL NAME: Pyridazine, 3-methoxy-6-(2-methoxyphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 ppm, 100% at 1000 ppm; radish (3 weeks)--50-75% at 100 and 300 ppm, 75% or greater at 1000 ppm; millet (3 days)--0% at 100 ppm, 60% or greater stem and 100% root at 1000 ppm; millet (3 weeks)--25-50% at 300 ppm, 50-75% at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3808>
CHEMICAL NAME: Pyridazine, 3-methylthio-6-phenoxy-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 and 1000 ppm; radish (3 weeks)--75% or greter at 100 ppm (foliar injury), no germination at 300 and 1000 ppm; millet (3 days)--30-60% stem and 60% or greater root at 300 ppm, 60% or greater at 1000 ppm; millet (3 weeks)--no germination at 300 and 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers dc, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3809>
CHEMICAL NAME: Pyridazine, 3-phenoxy-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS)
EXPERIMENTAL DOSE: 30 and 300 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Germination and growth evaluated; seeds placed in Petri dishes and exposed to 30 and 300 ppm solutions; data expressed as percent inhibition; final evaluations 3 weeks after seeding
EFFECTS: Barnyard grass--75% or greater inhibition at 30 ppm, no germination or complete kill at 300 ppm; Taisai--25-50% inhibition at 30 ppm, 50-75% at 300 ppm
COMMENTS: Several tests besides Petri dish study performed but not reported here; Petri dish study was screening trial, most comprehensive
REFERENCE: Jojima, T., N. Yoshimura, T. Takematsu, and S. Tamura, "Herbicidal Activity of Some Pyridazine Derivatives: Part III. 3-Phenoxypyriadazines and Related Compounds," Agric. Biol. Chem. 33(1):96-102 (1969).

<3810>
CHEMICAL NAME: Pyridazine, 3-phenoxy-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Taisai (BRASSICA CHINENSIS); Spikerush (ELEOCHARIS ACICULARIS); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 30 ppm and 250 g/10A
APPLICATION METHODS: Barnyard grass and Taisai seeds treated; postemergent treatment to all except Taisai
EXPERIMENTAL CONDITIONS: Germination test--barnyard grass and Taisai seeds exposed to 30 ppm; submerged pot test--barnyard grass seeds added and seedlings of rice and spikerush transplanted to each pot after barnyard grass germination test solution applied to each pot at 250 g/10A rate, observations 3 weeks later
EFFECTS: Germination test--60% or higher barnyard grass inhibition and 30% or lower Taisai inhibition; submerged pot test--barnyard grass and spikerush plants completely killed, no inhibition of rice
REFERENCE: Tamura, S., T. Jojima, K. Kawakubo, K. Nakamura, and T. Takematsu, "3-Phenoxypridazine as a New Selective Herbicide," Agric. Biol. Chem. 30(4):423-424 (1966).

<3811>
<3811>
CHEMICAL NAME: Pyridazine, 3,6-di([1,1'-biphenyl]-2-yloxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less at 1000 ppm; radish (3 weeks)--seedlings killed at 30 ppm; millet (3 days)--60% or greater at 1000 ppm; millet (3 weeks)--no germination at 30 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3812>
CHEMICAL NAME: Pyridazine, 3,6-di([1,1'-biphenyl]-3-chloro-4-yloxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less stem at 30 ppm, 0% stem at 300 and 1000 ppm, 30% or less root at 1000 ppm; radish (3 weeks)--0%; millet (3 days)--0%; millet (3 weeks)--25% or less at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3813>
CHEMICAL NAME: Pyridazine, 3,6-di(2-bromophenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less stem and 60% or greater root at 300 and 1000 ppm; radish (3 weeks)--50-75% at 300 ppm, 75% or greater at 1000 ppm (foliar injury); millet (3 days)--30-60% stem and 60% or greater root at 1000 ppm; millet (3 weeks)--75% or greater at 300 ppm, no germination at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3814>
CHEMICAL NAME: Pyridazine, 3,6-di(2-chlorophenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less at 1000 ppm; radish (3 weeks)--25% or less at 300 ppm, 50-75% at 1000 ppm; millet (3 days)--30% or less stem and 60% or greater root at 1000 ppm; millet (3 weeks)--50-75% at 300 ppm (foliar injury), no germination at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3815>
CHEMICAL NAME: Pyridazine, 3,6-di(2,4-dichlorophenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less at 1000 ppm; radish (3 weeks)--75% or greater at 300 and 1000 ppm; millet (3 days)--30% or less at 1000 ppm; millet (3 weeks)--25-50% at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3816>
CHEMICAL NAME: Pyridazine, 3,6-di(3-chlorophenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less at 1000 ppm; radish (3 weeks)--0%; millet (3 days)--30% or less at 1000 ppm; millet (3 weeks)--0%
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3817>
CHEMICAL NAME: Pyridazine, 3,6-di(3-methoxyphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less stem and 30-60% root at 1000 ppm; radish (3 weeks)--0% at 300 ppm (foliar injury), seedlings killed at 1000 ppm; millet (3 days)--30% or less stem and 60% or greater root at 1000 ppm; millet (3 weeks)--25-50% at 1000 ppm (foliar injury)
COMMENTS: Percentages refer to inhibition; postemergence test--considerable radish injury (foliar injury) and very weak millet injury at 3000 ppm 8 days after treatment
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3818>
CHEMICAL NAME: Pyridazine, 3,6-di(4-bromophenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less stem and 30-60% root at 300 and 1000 ppm; radish (3 weeks)--25% or less at 1000 ppm; millet (3 days)--0%; millet (3 weeks)--0%
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3819>
CHEMICAL NAME: Pyridazine, 3,6-di(4-chloro-3-methylphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less stem and 30-60% root at 1000 ppm; radish (3 weeks)--25% or less at 1000 ppm; millet (3 days)--0%; millet (3 weeks)--0%
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3820>
CHEMICAL NAME: Pyridazine, 3,6-di(4-methoxyphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--0% stem and 30% or less root at 1000 ppm; radish (3 weeks)--0%; millet (3 days)--30% or less root and 0% stem at 1000 ppm; millet (3 weeks)--25% or less at 1000 ppm
COMMENTS: Percentages refer to inhibition; postemergence test--no herbicidal activity
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3821>
<3821>
CHEMICAL NAME: Pyridazine, 3,6-di(4-methylphenoxy)-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--0%; radish (3 weeks)--25% or less at 1000 ppm; millet (3 days)--30% or less stem and 30-60% root at 1000 ppm; millet (3 weeks)--0%
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3822>
CHEMICAL NAME: Pyridazine, 3,6-dimethoxy-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--60% or greater at 300 and 1000 ppm; radish (3 weeks)--25% or less at 1000 ppm; millet (3 days)--30% or less at 1000 ppm; millet (3 weeks)--0% at 1000 ppm
COMMENTS: Percentages refer to growth inhibition; no distinction between stem and root inhibition when same or similar (researchers do, however, list stem and root even when alike)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3823>
CHEMICAL NAME: Pyridazine, 3,6-diphenoxy-
PLANT: Radish (RAPHANUS SATIVUS); Millet (PANICUM sp.)
EXPERIMENTAL DOSE: 30, 100, 300, and 1000 ppm
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Seeds germinated in test solutions in Petri dishes, inhibition of root and stem after 3 days growth determined; each dish then filled with vermiculite, subsequent seedling growth monitored with final evaluation after 3 wk growth
EFFECTS: Radish (3 days)--30% or less at 1000 ppm; radish (3 weeks)--25% or less at 1000 ppm; millet (3 days)--30% or less stem and 60% or greater root at 1000 ppm; millet (3 weeks)--50-75% at 300 ppm, seedlings killed at 1000 ppm
COMMENTS: Percentages refer to inhibition; postemergence test--serious radish injury (foliar injury) and very weak millet injury at 3000 ppm 8 days after treatment; no distinction between stem and root inhibition when similar or same (researchers list both even when same)
REFERENCE: Tamura, S. and T. Jojima, "Herbicidal Activity of Some Pyridazine Derivatives," Agric. Biol. Chem. 27(10):728-733 (1963).

<3824>
CHEMICAL NAME: Pyridazinone, 4-chloro-5-(dimethylamino)-2-[3-(trifluoromethyl)phenyl]-3(2H)-
CHEMICAL COMMON NAME: Sandoz 6706
PLANT: Wheat (TRITICUM VULGARE)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), 10(-7), and 10(-8) M
APPLICATION METHODS: Seeds germinated in Petri dishes containing test compound
EXPERIMENTAL CONDITIONS: Seeds germinated under one of the following conditions: (1) 6 days in light of 1 ft-candle (incandescent) or 1500 ft-candle (fluorescent and incandescent), 16 hr photoperiod 21 C, or (2) 6 days in darkness except for dim green light during watering, 23 C
EFFECTS: Carotene and xanthophyll synthesis inhibited; massive accumulation of phytoene in seedlings; synthesis of chlorophyll and tocopherol not inhibited
COMMENTS: Carotenoids synthesized and accumulated in light and dark-grown seedlings; indication that Sandoz 6706 interfered with dehydrogenation reactions of carotenoid pathway either by inhibiting dehydrogenase enzymes or synthesis of these enzymes during plastid development
REFERENCE: Bartels, P.G. and C. McCullough, "A New Inhibitor of Carotenoid Synthesis in Higher Plants: 4-chloro-5-(Dimethylamino)-2-alpha, alpha, alpha, (Trifluoro-m-Tolyl)-3(2H)-Phridazinone," Biochem. Biophys. Res. Commun. 48(1):16-22 (1972).

<3825>
CHEMICAL NAME: Pyridazinone, 4-chloro-5-(dimethylamino)-2-[3-(trifluoromethyl)phenyl]-3(2H)-
CHEMICAL COMMON NAME: Metflurazone
PLANT: Mustard (BRASSICA JAPONICA); Sorghum (SORGHUM BICOLOR); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, large (DIGITARIA SANGUINALIS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 13, 18, 23 and 35 ug
APPLICATION METHODS: Postemergence applications; application to leaves in 500 to 5000 ppm (w/v) concentrations of ethanol:glycerl:water (50:50:1 v/v) containing dissolved herbicide
EXPERIMENTAL CONDITIONS: Test tube grown seedlings, bottom immersed in nutrient medium; growth chamber grown--27 C and 16-hr day, 21 C dark period
EFFECTS: Mustard--23 ug caused severe chlorosis and seedling death by seventh day; sorghum--13 ug caused no effect on growth or development; pigweed--18 ug caused temporary chlorosis on first young leaf that grew after treatment; crabgrass--35 ug had no damaging effect; bluegrass--35 ug caused chlorotic band on youngest leaf, little or no effect on growth
COMMENTS: Rhizobitoxine--bacterially produced phytotoxin from RHIZOBIUM JAPONICUM
REFERENCE: Owens, L.D., "Herbicidal Potential of Rhizobitoxine," Weed Sci. 21(1):63-66 (1973).

<3826>
CHEMICAL NAME: Pyridazinone, 4-chloro-5-(dimethylamino)-2-[3-trifluoromethyl)phenyl)-
CHEMICAL COMMON NAME: San-6706
PLANT: Millet, Japanese (ECHINOCHLOA CRUSGALLI); Sorghum, grain (SORGHUM BICOLOR); Nutsedge, yellow (CYPERUS ESCULENTUS); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.12, 2.24, and 4.48 kg/ha
APPLICATION METHODS: Preplant spray; 37 dkl./ha; soil incorporated (10 cm depth)
EXPERIMENTAL CONDITIONS: Field study; soil--Hespera sandy loam and Hespera loamy sand; evaluation time--2 and 5 wk and harvest; sorghum and millet used as bioassay plants in persistence evaluation
EFFECTS: Effective control of nutsedge with severe damage to millet and sorghum with slight yield reduction of seed cotton
COMMENTS: All herbicides controlled nutsedge for at least 1 month in two or more experiments; cotton most tolerant to applications of CP-53619, of prometryne, of San-6706, and of methazole; higher rates of San-6706 and methazole and all rates of alachlor, R-7465, and R-12001 reduced yield of cotton in one or more experiments
REFERENCE: Keeley, P.E., J.H. Miller, and C.H. Carter, "Weed and Cotton Response to Several Herbicides," Weed Sci. 21(4):327-329 (1973).

<3827>
CHEMICAL NAME: Pyridazinone, 4-chloro-5-(dimethylamino)-2-[3-trifluoromethyl)phenyl)-
CHEMICAL COMMON NAME: SAN-6706
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Cotton (GOSSYPIUM HIRSUTUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.12, 2.24, and 4.48 kg/ha
APPLICATION METHODS: Soil surface spray (preplant) with incorporation; 56 dkl/ha; depth--6.35 cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Hesperia fine sandy loam; temperature--27 to 31 C; nutsedge tubers and cotton seed planted; plastic container culture; evaluation time--up to 8 wk
EFFECTS: Effective control of yellow nutsedge; slightly less effective against purple nutsedge; cotton fairly tolerant to CP-53619
COMMENTS: All treatments except lowest rate of alachlor and VCS-438 controlled yellow nutsedge for 8 weeks; these and other compounds less effective against purple nutsedge; all herbicides moderately to severely damaged cotton except CP-53619 and R-7465
REFERENCE: Keeley, P.E., C.H. Carter, and J.H. Miller, "Evaluation of the Relative Toxicity of Herbicides to Cotton and Nutsedge," Weed Sci. 20(1):71-74 (1972).

<3828>
CHEMICAL NAME: Pyridazinone, 4-chloro-5-(methylamino)-2-[3-(trifluormethyl)-phenyl]-3(2H)-
CHEMICAL COMMON NAME: SAN-9789
PLANT: Nutsedge (CYPERUS DENTATUS); Cutgrass (LEERSIA ORYZOIDES); Cranberry, American (VACCINIUM MACROCARPON)
EXPERIMENTAL DOSE: 9, 13.5, 18, and 27 kg/ha
APPLICATION METHODS: Preemergence application in April--5% granular formulation
EXPERIMENTAL CONDITIONS: 25 plots, each 6 m(2) in area established in section of weed-free cranberry bog; September harvest--vine and berry damage (size determination) assessed; color dermination, pectin analysis, and berry herbicide accumulation also made
EFFECTS: Temporary chlorosis to cranberry at 13.5 kg/ha, more extensive and permanent chlorosis at 18 and 27 kg/ha; no significant effect to berry; only at 27 kg/ha was significant pectin reduction noted--27% reduction; no significant pigment impairment or accumulation of SAN-9789; effective weed control
COMMENTS: Author feels SAN-9787 could solve nutsedge and cutgrass problem for southeastern Massachusetts cranberry growers
REFERENCE: Delvin, R.M. and K.H. Deubert, "Tolerance of Cranberry (VACCINIUM MACROCARPON) to SAN-9789: A Experimental Herbicide," Weed Res. 13:393-398 (1973).

<3829>
CHEMICAL NAME: Pyridazinone, 4-chloro-5-(methylamino)-2-[3-(trifluoromethyl)phenyl]-
CHEMICAL COMMON NAME: SAN-9789
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperture--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect noted
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3830>
CHEMICAL NAME: Pyridazinone, 4-chloro-5-(methylamino)-2-[3-(trifluoromethyl)phenyl]-3(2H)-
CHEMICAL COMMON NAME: Norflurazon
PLANT: Pondweed (POTAMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 0.01, 0.10, 1.00, 10.00, and 100.00 mg/l.
APPLICATION METHODS: Plants grown in growth media containing norflurazon
EXPERIMENTAL CONDITIONS: Plants started from tubers in 4 liters sterile distilled water; after 3 days plants transferred to jars containing media plus-norflurazon; growth chamber--25 plus or minus 1 C, continuous light duration (10,760 and 108 lux); chlorophyll and growth analysis after 17 days
EFFECTS: Decreased chlorophyll content with increased concentration--10 and 100 mg/l caused almost total chlorosis; growth not affected; more chlorophyll reduction (greater percentage) when grown under high intensity light than low intensity

<3830>
<3830> CONT.
COMMENTS: Growth not affected due to plant living off tubers--death would result in time after food exhausted; aquatic plant studies; mode of action-carotenoid synthesis blocked thus chlorophyll becomes subject to photodynamic destruction
REFERENCE: Delvin, R.M. and S.J. Karczmarczyk, "Response of POTAMOGETON PECTINATUS L. to Norflurazon," Aquat. Bot. 1:263-268 (1975).

<3831>
CHEMICAL NAME: Pyridazinone, 4-chloro-5-(methylamino)-2-[3-(trifluoromethyl)phenyl]-3(2H)-
CHEMICAL COMMON NAME: Norflurazon
PLANT: Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 1.68 kg/ha
APPLICATION METHODS: Preplanting incorporated applications in spray volumes of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: 75% weed control 25 days after treatment
COMMENTS: Hophornbeam copperleaf--southwestern weed prevalent in peanuts
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<3832>
CHEMICAL NAME: Pyridazinone, 4-chloro-5-(methylamino)-2-[3-(trifluoromethyl)phenyl]-3(2H)-
CHEMICAL COMMON NAME: Norflurazon
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: 4 lb/A in fall, 2 and 4 lb/A in spring; incorporated in spring and fall
EXPERIMENTAL CONDITIONS: Fall and spring application; 5 to 6 inch incorporation; plots--4 x 20 ft with 3 replications; monthly nutsedge counts; field studies
EFFECTS: Fall--effective control even 5 months after treatment, 100% control at months 1 and 2; spring--2 lb/A only effective at month 2 and 6, 4 lb/A effective only at month 6 after application
COMMENTS: Better control with fall application than with spring treatment
REFERENCE: Locascio, S.J. and W.L. Currey, "Yellow Nutsedge (CYPERUS ESCULENTUS) control and Vegetable Crop Tolerance with Various Herbicides," Proc. South. Weed Sci. Soc. 26:259-266 (1973).

<3833>
CHEMICAL NAME: Pyridazinone, 4-chloro-5-(methylamino)-2-[3-(trifluoromethyl)phenyl]-3(2H)-
CHEMICAL COMMON NAME: Norflurazon
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.0 to 8.0 lb/A
APPLICATION METHODS: Preemergence; preplant incorporated (norflurazon only)
EXPERIMENTAL CONDITIONS: Field study; soils--Decatur clay loam and Lucedale sandy loam; time period--4 to 5 yr
EFFECTS: Effective control of grasses at 1.0 lb/A but at least 3.0 lb/A required for broadleaf control with no adverse effect on cotton yield
COMMENTS: Control of annual grasses essentially complete with perfluidone; for broadleaf weeds, however, rates lower than 3.0 lb. not satisfactory; perfluidone caused substantial stunting of cotton, particularly at rates of 3.0 lb per acre or higher;
REFERENCE: Buchanan, G.A., R.D. McLaughlin, and G.C. Weed, "Destun and Zorial-New Herbicides for Use in Cotton," Highl. Agric. Res. 22(1):6 (1975).

<3834>
CHEMICAL NAME: Pyridazinone, 4-chloro-5-(methylamino)-2-[3-(trifluoromethyl)phenyl]-3(2H)-
CHEMICAL COMMON NAME: SAN-9789
PLANT: Cranberry, American (VACCINIUM MACROCARPON)
EXPERIMENTAL DOSE: 9.0, 13.5, 18.0, and 27.0 kg/ha
APPLICATION METHODS: Preemergence application; 5% G
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight chlorosis at 13.5 kg/ha; chlorsis more extensive and permanent at higher rates; no significant differences in berry size, dry, weight, etc could be attributed to treatments; reduction of pectin content occurred at high rate (27.0 kg/ha); no detectable amounts of SAN-9789 at harvest
COMMENTS: SAN-9789 appears reliable herbicide safe for use in cranberries
REFERENCE: Devlin, R.M. and K.H. Deubert, "Tolerance of Cranberry (VACCINIUM MACROCARON) to SAN-9789," Weed Res. 13(4):393-398 (1973).

<3835>
CHEMICAL NAME: Pyridazinone, 4-chloro-5-(methylamino)-2-[3-(trifluoromethyl)phenyl]-3(2H)-
CHEMICAL COMMON NAME: Norflurazon
PLANT: Sedge, toothed (CYPERUS DENTATUS); Rice (LEERSIA ORYZOIDES); Spike-grass (DISTICHLIS SPICATA); Bunchgrass (ANDROPOGON SCOPARIUS); Fern grass (MUHLENBERGIA UNIFLORA); Panicum, fall (PANICUM DICHOTOMIFLORUM); Ryegrass, Italian (LOLIUM MULTIFLORUM); Ragwort, common (SENECIO VULGARIS); Sowthistle, annual (SONCHUS OLERACEUS); Chickweed, common (STELLARIA MEDIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Alfalfa (MEDICAGO SATIVA); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, large (DIGITARIA SANGUINALIS); Wiregrass (ELEUSINE,INDICA); Signalgrass, broad-leaf (BRACHIARIA PLATYPHYLLA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Sida, spiny (SIDA SPINOSA); Purslane, common (PORTULACA OLERACEA); Pusley, Florida (RICHARDIA SCABRA); Senna (CASSIA OBTUSIFOLIA); Cocklebur, Pennsylvanian (XANTHIUM PENSYLVANICUM); Cranberry, American (VACCINIUM MACROCARPON)
EXPERIMENTAL DOSE: Experiment 1--1.0, 1.5 and 2 lb/A; experiment 2--6 to 8 lb/A; experiment 3--1.0, 1.5, 2.0 and 3.0 lb/A
APPLICATION METHODS: Preemergence surface application
EXPERIMENTAL CONDITIONS: Experiment 1--cotton crop, light soil treatment of 1 lb/A, medium soil treatment of 1.5 lb/A and heavy soil treatment of 2.0 lb/A; experiment 2--cranberries, 6 to 8 lb/A; experiment

<3835> CONT.
3--alfalfa, light soil treatment of 1.0 to 1.5 lb/A, medium soil treatment of 1.5 to 2.0 lb/A and heavy soil treatment of 2.0 to 3.0 lb/A, winter treatments
EFFECTS: Experiment 1--good weed control, no injury to cotton; experiment 2--good weed control, no injury to cranberries; experiment 3--good weed control, good safety to crop
COMMENTS: Safety margin of norflurazon good to excellent for cotton, cranberries and alfalfa on heavy and medium soils; acceptable to good safety margin on very light soils, some crop variation
REFERENCE: Lavalleye, M.P., V.F. Boyd, C.G. Keefer, L.F. Hist and W. McDonald, "San 9789, A Pyridazinone Herbicide Selective for Cotton and other Crops," Proc. South. Weed Sci. Soc. 26:124-130 (1973).

<3836>
CHEMICAL NAME: Pyridazinone, 5-amino-4-chloro-2-phenyl-3(2H)-
CHEMICAL COMMON NAME: Pyrazon
PLANT: Purslane, common (PORTULACA OLERACEA); Lamb's-quarters (CHENOPODIUM ALBUM); Horseweed (ERIGERON CANADENSIS); Carnation; Dwarf mallow (MALVA ROTUNDIFOLIA); Bluegrass, annual (POA ANNUA); Buttercup, Bermuda (OXALIS CERNUA); Pigweed, prostrate (AMARANTHUS BLITOIDES)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Spray application to ground bed; incorporation to about one-half in. depth by raking
EXPERIMENTAL CONDITIONS: Field study; soil--Sorrento fine sandy loam with one in cedar shavings mixed to 4-6 in. depth by rototilling; plants set seven days after herbicide application; evaluation--3, 8, and 12 wks (weed counts and crop phytotoxicity) and 6, 7, and 8 mos (crop yield)
EFFECTS: Effective control at 4.0 lb/A; moderate control at 2.0 lb/A; reduced yield occurred at both rates; visual phytotoxicity observed only at the 4.0 lb/A application rate
COMMENTS: Four herbicides evaluated; propachlor appeared to be promising preemergence and preplant herbicide for control of wide variety of weeds in carnation culture; miscellaneous additional weeds also effectively controlled at herbicide rates cited above
REFERENCE: Bivins, J.L., C. Elmore, and A. Lange, "Chemical Weed Control in Carnation Transplants," Calif. Agric. 26(8):14-15 (1972).

<3837>
CHEMICAL NAME: Pyridazinone, 5-amino-4-chloro-2-phenyl-3(2H)-
CHEMICAL COMMON NAME: Pyrazon
PLANT: Turnip (BRASSICA RAPA)
EXPERIMENTAL DOSE: 0.62 and 0.67 kg/ha
APPLICATION METHODS: Addition to soil; laboratory sprayer; 413 l./ha at 2.11 kg/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soils-- Bledington and Boddington Barn; pot culture; temperature--13 to 23 C; pH--6.3 or 6.9 or 7.3
EFFECTS: Growth reduction of turnip with no difference resulting from liming
COMMENTS: Metoxuron, fenuron, metribuzin, and fluometuron more active in Boddington Barn soil than in Bledington soil; prometryne similar in effect in both soils
REFERENCE: Richardson, W.G. and J.D. Banting, "The Phytotoxicity of Various Herbicides in Two Sandy Loam Soils and the Effect of Liming," Weed Res. 17(3):203-207 (1977).

<3838>
CHEMICAL NAME: Pyridazinone, 5-amino-4-chloro-2-phenyl-3(2H)-
CHEMICAL COMMON NAME: Pyrazon
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Poor control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3839>
CHEMICAL NAME: Pyridazinone, 5-amino-4-chloro-2-phenyl-3(2H)-
CHEMICAL COMMON NAME: Pyrazon
PLANT: Pimpernel, common (ANAGALLIS ARVENSIS); Crunchweed (SINAPIS ARVENSIS); Pigweed (AMARANTHUS sp.); Bindweed, field (CONVOLVULUS ARVENSIS)
EXPERIMENTAL DOSE: 1.6 and 3.2 kg/ha
APPLICATION METHODS: Postemergence application; 200 l./ha; trifluralin and chlorthal-dimethyl incorporated by rototilling; all others not incorporated
EXPERIMENTAL CONDITIONS: Field study; plots sprayed twice a year over a 4-year period; sprinkler irrigation; greenhouse study; residues determined by mustard bioassay
EFFECTS: Moderate control of weeds at both rates; no residual toxicity
COMMENTS: Phytotoxicity to weeds in decreasing order: diuron, bromacil, simazine, trifluralin, prometryne, neburon, fluometuron, pyrazon, diphenamid, chlorthal-dimethyl; persistence of herbicides in decreasing order: diuron, bromacil, simazine, neburon, fluometuron, trifluralin, prometryne; control produced by pyrazon improved with the number of applications, but that of diphenamid and chlorthal-dimethyl remained weak and short
REFERENCE: Horowitz, M., T. Blumenfeld, G. Herzlinger, and N. Hulin, "Effects of Repeated Applications of Ten Herbicides on Weed Population, Residue Accumulation and Nitrification," Weed Res. 14(2):97-109 (1974).

<3840>
<3840>
CHEMICAL NAME: Pyridazinone, 5-amino-4-chloro-2-phenyl-3(2H)-
CHEMICAL COMMON NAME: Pyrazon
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat, and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in sorghum, oat, and cucumber at 1 and 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<3841>
CHEMICAL NAME: Pyridazinone, 5-amino-4-chloro-2-phenyl-3(2H)-
CHEMICAL COMMON NAME: Pyrazon
PLANT: Grasses; Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 3.0, 4.5, and 5.0 lb/A
APPLICATION METHODS: Preemergence treatments 1 day after planting at 3.0 and 4.5 lb/A, postemergence treatment 26 days after planting at 5.0 lb/A
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared the following April; single row plots, 3 by 26 ft; treatments randomized in each of 8 blocks; 15 ft of row from each plot harvested July 16; non-treated plot--43 plants harvested
EFFECTS: Lambsquarter control--poor on June 7 and July 14; grass control--excellent on July 14; ragweed control--excellent on July 14; 60 plants harvested at 3.0 lb/A, 77 plants at 4.5 lb/A; similar effects from preemergence and postemergence treatments
COMMENTS: Pyrazon in combination with other herbicides also reported
REFERENCE: Noll, C.J., "Weed Control in Beets with Herbicides," Proc. Northeast. Weed Sci. Soc. 31:244-246 (1977).

<3842>
CHEMICAL NAME: Pyridazinone, 5-amino-4-chloro-2-phenyl-3(2H)-
CHEMICAL COMMON NAME: Pyrazon
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 4.0 to 16.0 ppm
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; soil-prepared with varying clay, silt, sand, lime, and organic content; plastic cup culture
EFFECTS: Reduced growth (fresh weight) of shoots
COMMENTS: Cycloate was most potent herbicide of four, except in soils with high organic matter where delachlor was more active; benzthiazuron was least phytotoxic herbicide in the peat + sand mixtures, but more active than pyrazon in lighter soils of the Newe Ya'ar series; addition of sand to peat and soils increased phytotoxicity of all herbicides; addition of lime to Newe Ya'ar clay soil decreased phytotoxicity of benzthiazuron and pyrazon but not of delachlor
REFERENCE: Horowitz, M. and T. Blumenfeld, "Phytotoxicity in Different Synthetic Soils," Phytoparasitica 1(2):101-110 (1973).

<3843>
CHEMICAL NAME: Pyridazinone, 5-amino-4-chloro-2-phenyl-3(2H)-
CHEMICAL COMMON NAME: Pyrazone
PLANT: Beet, sugar (BETA VULGARIS); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1.87 to 3.12 lb/A
APPLICATION METHODS: Preemergence spray; 20 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Newport type; time period--1970 to 1972
EFFECTS: Moderate to effective control of weeds with slight initial vigor reduction of sugar beet but no adverse effect on yield
COMMENTS: Pyrazone and lenacil caused temporary loss of vigour in beet seedlings, did not reduce seedling number or affect final yield; margin of safety with these materials not large, dosage rates 25 percent in excess of the recommended rate tolerated even in two seasons when very wet weather followed herbicide application; both materials gave good weed control in wet spring and were less active in a dry spring; in dry conditions, lenacil appeared to retain more activity than pyrazone
REFERENCE: Short, J.L., "The Use of Sugar Beet Herbicides on Sandy Soils," Proc. 11th. British Weed Cont. Conf. 2:499-504 (1972).

<3844>
CHEMICAL NAME: Pyridazinone, 5-amino-4-chloro-2-phenyl-3(2H)-
CHEMICAL COMMON NAME: Pyrazone
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 2.5, 5.0, and 10.0 kg/ha; 0.05, 0.1, 0.2, 0.5, 1.0, 2.5, 5.0, and 7.5 ppm dry sand
APPLICATION METHODS: Test 1 and 2--postemergence spray at volume rate of 352 l./ha and pressure of 2.1 kg/cm (2), 80% WP formulation; test 2 and 3--administered in 50 ml water to sand surface as well as by spray
EXPERIMENTAL CONDITIONS: Greenhouse study; test 1 plants grown in soil medium; test 2 and 3 plants grown in sand; 2 replications; tests 2 and 3 had foliage spray and surface solution application experiments; visual assessments made and dry weights determined
EFFECTS: Test 1--slight marginal necrosis on 1 or 2 leaves after 4 weeks, no significant reduction in dry

<3844> CONT.
weight compared to control; test 2--slight marginal chlorosis of oldest leaves with foliage treatment, 5 ppmw caused severe necrosis of older leaves; test 3--slight marginal and interveinal chlorosis with foliage spray and considerable interveinal necrosis with higher ppmw root treatments
REFERENCE: Clay, D.V., "The Response of Strawberry to a Range of Foliage Acting Herbicides," Proc. Brit. Weed Control Conf. 11:409-416 (1972).

<3845>
CHEMICAL NAME: Pyridazinone, 5-amino-4-chloro-2-phenyl-3(2H)-
CHEMICAL COMMON NAME: Pyrazone
PLANT: Plants; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; 5 sites in Romania; time period--1972 and 1973
EFFECTS: Little or no weed control with no adverse effect on sugar beet yield
COMMENTS: Results obtained from herbicides used alone unsatisfactory with many species uncontrolled; mixture of herbicides, or sequential treatments required for satisfactory weed control; best results obtained using ethofumesate associated with lenacil or phenmedipham
REFERENCE: Sarpe, N., O. Segarceanu, L. Ciorlaus, I. Popovici, I. Clotan, and C. Nagy, "The Efficiency of Herbicides Based on Pyrazone, Ethofumesate, Lenacil and Phenmedipha, Used Alone or in Combination, in Sugar Beet Grown Under Romanian Conditions," Proc. 12th. Br. Weed Cont. Conf. 2:477-483 (1974).

<3846>
CHEMICAL NAME: Pyridazinone, 5-amino-4-chloro-2-phenyl-3(2H)-
CHEMICAL COMMON NAME: Pyrazon
PLANT: Broadleaf weeds; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 3.64 and 4.48 kg/ha
APPLICATION METHODS: Pre-plant incorporated, preemergence, or postemergence sprays; 280 l./ha at 2 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1972 and 1973
EFFECTS: Slight weed control with no adverse effect on beet
COMMENTS: Broadleaf weed control achieved in table beets with cycloate, CNP, pebulate, lenacil, pyrazon, IMC 3950, TCA + pyrazon, and pebulate followed by pyrazone; fair weed control achieved with EPTC, propachlor, and solubor; poor weed control obtained from CDEC, chlorpropham, pyrazon, and TCA; yields expressed as $/ha or tons/ha reduced by chlorpropham, lenacil, CNP, and TCA
REFERENCE: Phatak, S.C. and D.J. Cantliffe, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Table Beets," Hortsci. 10(3):271-273 (1975).

<3847>
CHEMICAL NAME: Pyridine
CHEMICAL COMMON NAME: Pyridine
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 1.9 to greater than 0.9 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3848>
CHEMICAL NAME: Pyridine, 2-amino-3-hydroxy-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 8.0 to 2.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Severe inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3849>
CHEMICAL NAME: Pyridine, 2-amino-4,6-dimethyl-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 4.1 to greater than 3.1 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred

<3849>
<3849> CONT.
persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3850>
CHEMICAL NAME: Pyridine, 2-chloro-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 2.1 to greater than 1.1 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3851>
CHEMICAL NAME: Pyridine, 2-chloro-6-(trichloromethyl)-
CHEMICAL COMMON NAME: Nitrapyrin
PLANT: Corn (ZEA MAYS); Sorghum, grain (SORGHUM BICOLOR); Wheat (TRITICUM AESTIVUM); Rice (ORYZA SATIVA); Beet, sugar (BETA VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Alfalfa (MEDICAGO SATIVA); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.0 to 500 ppmw
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--14, 21, and 24 da
EFFECTS: Growth reduction of all species at 16 to 165 ppmw
COMMENTS: Nitrapyrin more phytotoxic to graminaceous species tested than its metabolite; 6-chloropicolinic acid more toxic than nitrapyrin to dicotyledonous species; dicotyledonous plants more sensitive to both compounds than grasses
REFERENCE: Geronimo, J., L. L. Smith, G. D. Stockdale, and C. A. I. Goring, "Laboratory Studies on the Phytotoxicity of Nitrapyrin and Its Principal Metabolite 6-Chloropicolinic Acid," Down Earth 29(3):25-28 (1973).

<3852>
CHEMICAL NAME: Pyridine, 2-chloro-6-(trichloromethyl)-
CHEMICAL COMMON NAME: N-Serve
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 5.4 to greater than 3.8 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3853>
CHEMICAL NAME: Pyridine, 2-chloro-6-(trichloromethyl)-
CHEMICAL COMMON NAME: N-serve
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1.0 to 10.0 ppmw
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Laboratory study; pot culture; temperature--25 to 32 C; light intensity--500 ft C; soil--Eufala fine sand
EFFECTS: At 1.0 ppm w, severe leaf curling
COMMENTS: CUCUMIS SATIVA developed marginal chlorosis with fluometuron, palmate veinal chlorotic pattern with prometryne,; auxin-type manifestations of meristematic tissues with picloram, and an interveinal chlorotic pattern with pyriclor
REFERENCE: Lynd, J.W., C. Rieck, D. Barnes, D. Murray, and P.W. Santelmann, "Indicator Plant Aberrations at Threshold Soil Herbicide Levels," J. Agron. 59(1):194-196 (1967).

<3854>
CHEMICAL NAME: Pyridine, 2-chloro-6-(trichloromethyl)-
CHEMICAL COMMON NAME: Nitrapyrin
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM BICOLOR); Wheat (TRITICUM AESTIVUM); Rice (ORYZA SATIVA); Beet, sugar (BETA VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Alfalfa (MEDICAGO SATIVA); Alfalfa (MEDICAGO SATIVA); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 5-500 ppmw
APPLICATION METHODS: Added to soil; mixed by roller mill
EXPERIMENTAL CONDITIONS: Greenhouse study; varied soil types--sand, loam, and clay; temperatures--26.7 to 32.2 C(day) and 13.3 to 21.1 C (night); evaluation time--14 to 24 days; pot (can) culture
EFFECTS: Significant reduction in fresh weight of all test plants at 10-50 ppmw except sorghum which required

<3854> CONT.
100 ppmw
COMMENTS: Nitrapyrin more toxic than 6-chloropicolinic acid to graminaceous species; 6-chloropicolinic acid more toxic than nitrapyrin to the dicotyledenous species; dicotyledenous species more sensitive to both compounds than graminaceous species
REFERENCE: Geronimo, N., L.L. Smith, G.D. Stockdale, and C.A. I. Goring, "Comparative Phytotoxicity of Nitrapyrin and Its Principal Metabolite, 6-Chloropicolinic Acid," Agron. J. 65:689-692 (1973).

<3855>
CHEMICAL NAME: Pyridine, 2-chloro-6-(trichloromethyl)-
CHEMICAL COMMON NAME: N-Serve
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Corn (ZEA MAYS); Cucumber (CUCUMIS SATIVUS); Bean, snap (PHASEOLUS VULGARIS); Pumpkin (CUCURBITA PEPO); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 5 to 100 ppm
APPLICATION METHODS: Addition to soil and mixed
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Reduced growth for all species except tomato at 50 and/or 100 ppm
COMMENTS: Toxicity of N-Serve occurred on young plants of bean, corn, cucumber, pea, and pumpkin when concentration at least 50 ppm in soil; reduction in fresh or dry weight production most uniform characteristic of N-Serve toxicity; cucumbers and peas showed visible foliar signs of injury which persisted until harvest while beans showed a temporary manifestation of N-Serve toxicity on primary leaves; tomato plants did not appear injuried at concentrations as high as 100 ppm in the soil
REFERENCE: Mills, H.A., A.V. Barker, and D.N. Maynard, "A Study of the Phytotoxicity of 2-Chloro-6-(Trichloromethyl) Pyridine," Comm. in Soil Sci. and Plant Anal. 4(6):487-494 (1973).

<3856>
CHEMICAL NAME: Pyridine, 2-chloro-6-(trichloromethyl)-
CHEMICAL COMMON NAME: Nitrapyrin
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10, 20, 50, 100, 200, and 500 ppmw
APPLICATION METHODS: Nitropyrin dissolved in methylene chloride added to soil as treated bands; 20, 50, and 100 ppmw added to cotton soils, all rates tested on wheat
EXPERIMENTAL CONDITIONS: Chemical thoroughly mixed with sandy soil; band of treated soil then placed in cans either above or below seeds--150 g of treated soil; soil in cans brought to field water capacity (10%); 2.54 cm thick styrene-divinyl benzene 8% copolymer beads added to soil surface to minimize evaporation; cans transferred to greenhouse; randomized block design with 4 replicates; growth determined
EFFECTS: Cotton fresh weight decreases significantly with increasing concentration when treatment applied below seeds (root exposure), significant decrease in fresh weight only at 100 ppmw when treatment applied above seeds (shoot exposure); wheat fresh weight decreases significantly with increasing concentration from root exposure, shoot exposure gave significant decreases at rates above 20 ppmw
COMMENTS: Exposure of cotton root more important than shoot exposure for inhibiting top growth; wheat shoot and root exposure caused severe inhibition
REFERENCE: Geronimo, J., L.L. Smith, Jr., and G.D. Stockdale, "Effect of Site Exposure to Nitrapyrin and 6-Chloropicolinic Acid on Growth of Cotton and Wheat Seedlings," Agron. J. 65:692-693 (1973).

<3857>
CHEMICAL NAME: Pyridine, 2-chloro-6-methoxy-3-nitro-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 5.3 to 3.5 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Moderate inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3858>
CHEMICAL NAME: Pyridine, 2-methyl-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 2.0 to 1.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3859>
<3859>
CHEMICAL NAME: Pyridine, 2,3,6-trimethyl-
CHEMICAL COMMON NAME: 2,3,6-Trimethylpyridine
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: greater than 3.1 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: No inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3860>
CHEMICAL NAME: Pyridine, 2,4-dimethyl-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 3.0 to greater than 2.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3861>
CHEMICAL NAME: Pyridine, 2,4,6-trimethyl-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 3.0 to 2.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: No inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3862>
CHEMICAL NAME: Pyridine, 2,5-dichloro-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 5.3 to greater than 5.4 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Moderate inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3863>
CHEMICAL NAME: Pyridine, 2,5-dichloro-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 4.0 to greater than 2.7 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3864>
CHEMICAL NAME: Pyridine, 2,6-dimethyl-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 3.0 to greater than 2.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3865>
CHEMICAL NAME: Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-
CHEMICAL COMMON NAME: Nicotine
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 3%
APPLICATION METHODS: Dust; 30 lb/A
EXPERIMENTAL CONDITIONS: Field study; 4 or 8 applications beginning with plant emergence
EFFECTS: No adverse effect
COMMENTS: Four applications of dusts of lindane, rotenone, methoxychlor, nicotine, calcium arsenate-tale, calcium arsenate-COCS, or COCS-talc neutral in effect on cucumber; four applications of dusts of DDT caused severe stunting of vines and markedly reduced yields
REFERENCE: Harcourt, D.G. and L.M. Cass, "Toxicities of Various Insecticides to Cucumber," Cand. J. Agr. Sci. 35:19-26 (1955).

<3866>
CHEMICAL NAME: Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-
CHEMICAL COMMON NAME: Nicotine
PLANT: Antirrhinum; Aster (ASTER sp.); Begonia (BEGONIA sp.); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Cineraria; Coleus (COLEUS BLUMEI); Cyclamen; Dahlia; Geranium; Petunia (PETUNIA sp.); Polyanthus; Violet (VIOLA sp.); Zinnia (ZINNIA sp.)
EXPERIMENTAL DOSE: 160 fl oz/100 gal
APPLICATION METHODS: Foliage spray at once, twice, and five times normal dosages with equivalent amount of wetting agent; normal active ingredient, 0.05%
EXPERIMENTAL CONDITIONS: Greenhouse and field study; treatments replicated 3 times; plants sprayed til leaves thoroughly drenched
EFFECTS: Violet--0.05% spray caused necrotic patches on lamina and leaf edges; no damage to other plants at 5 times normal dosage
COMMENTS: 0.05% spray--minimum dose toxic to violet
REFERENCE: Dennis, E.B. and C.A. Edwards, "Phytotoxicity of Insecticides and Acaricides II. Flowers and Ornamentals," Plant Pathol. 12:27-36 (1963).

<3867>
CHEMICAL NAME: Pyridine, 3-chloro-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 5.1 to 1.1 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3868>
CHEMICAL NAME: Pyridine, 3-hydroxy-6-methyl-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 7.0 to 1.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Severe inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3869>
<3869>
CHEMICAL NAME: Pyridine, 3-methyl-
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: No damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<3870>
CHEMICAL NAME: Pyridine, 3,5-dichloro-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: Greater than 2.1 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: No inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3871>
CHEMICAL NAME: Pyridine, 3,5-dichloro-2,6-difluoro-4-(phenylmethoxy)-
CHEMICAL COMMON NAME: PP-888
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, creeping red (FESTUCA RUBRA); Crabgrass (DIGITARIA ISCHAEMUM)
EXPERIMENTAL DOSE: 2, 3, and 6 lb/A
APPLICATION METHODS: Preemergence treatments with CO(2) sprayer at 86 gpa
EXPERIMENTAL CONDITIONS: Crabgrass control studies in turfgrass; 4 x 5 ft plot with 3 replications; herbicides applied May 1, injury ratings on August 22
EFFECTS: No crabgrass control; severe turfgrass injury
COMMENTS: Fescue, bentgrass, and bluegrass tabulated as turfgrass
REFERENCE: Coville, C.M. and J.A. Jagschitz, "Herbicides for Preemergence Crabgrass and Goosegrass Control in Turfgrass--1975," Proc. Northeast. Weed Sci. Soc. 30:367-371 (1976).

<3872>
CHEMICAL NAME: Pyridine, 4-amino-3,5-dichloro-6-hydroxy-
CHEMICAL COMMON NAME: Picloram, 6-hydroxy-decarboxy-
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 10.0 to 100.0 ppm
APPLICATION METHODS: Nutrient solution addition
EXPERIMENTAL CONDITIONS: Environmental chamber; nutrient solution (glass jar) culture; photoperiod--16 hr; light intensity--1800 ft candles; temperature--22 to 24 C (day) and 9-11 C (night); evaluation time--6 days
EFFECTS: 50% growth reduction of shoot fresh weight at 86.0 ppm
COMMENTS: Pichloram more phytotoxic to sunflower than three pichloram derivatives evaluated
REFERENCE: Grover, R., J.R. Gear, and R. Zerr, "Relative Phytotoxicity of Some Pichloram Derivatives," Bull. Environ. Contam. Toxicol. 14(1):721-725 (1975).

<3873>
CHEMICAL NAME: Pyridine, 4-chloro-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 3.0 to 1.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3874>
CHEMICAL NAME: Pyridine, 4-hydroxy-2,3,5-trichloro-
CHEMICAL COMMON NAME: Daxtron
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: Greater than 7.3 to 3.3 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and P. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3875>
CHEMICAL NAME: Pyridine, 4-methyl-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 3.0 to 1.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and P. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3876>
CHEMICAL NAME: Pyridine, 5-butyl-2-ethylamino-4-hydroxy-6-methyl-
CHEMICAL COMMON NAME: Ethirimol
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.16 and 16.0 ppm (greenhouse); 4.0 lb/A (field)
APPLICATION METHODS: Addition to Hoagland nutrient solution with weekly renewal (greenhouse); seed dressing (field)
EXPERIMENTAL CONDITIONS: Greenhouse and field study; temperature--20C; continuous light; evaluation time--2 wk
EFFECTS: Significant chiasma reduction (chromosome volume) with reduced root growth
COMMENTS: Small reduction in chiasma frequency, even when ethirimol supplied in large concentrations, indicated losses in yield due to infertility most unlikely a result of fungicide treatment
REFERENCE: Bennett, M.D., "Effects of Ethirimol on Cytological Characters in Barley," Nature 230(5288):406 (1971).

<3877>
CHEMICAL NAME: Pyridinedione, 5-bromo-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: DP-733
PLANT: Broadleaf weeds; Grasses; Bermudagrass, common (CYNODON DACTYLON); Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.24 and 4.48 kg/ha
APPLICATION METHODS: Postemergence spray; 170 l/ha
EXPERIMENTAL CONDITIONS: Field study; time period--1966 to 1968; soil residues studied
EFFECTS: Effective control of all weeds at both rates with no adverse effects on peach tree growth; incorporation improved effectiveness
COMMENTS: Average monthly ratings showed significant increases in bermudagrass control with incorporation of all three herbicides; tree-trunk diameters in incorporated dichlobenil plots greater than those in surface-applied dichlobenil plots; incorporation in soil reduced loss of dichlobenil, terbacil, and DP-733.
REFERENCE: Skroch, W.A., T.J. Sheets, and J.W. Smith, "Herbicide Effectiveness, Soil Residues, and Phytotoxicity to Peach Trees," Weed Sci. 19(3):257-260 (1971).

<3878>
CHEMICAL NAME: Pyridinium, cetyl-, chloride
CHEMICAL COMMON NAME: Intexsan CPC
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: No survival of PHALAENOPSIS at 1000 ppm and reduced survival at 100 ppm; no growth of EPIDENDRUM at 1000 ppm
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<3879>
<3879>
CHEMICAL NAME: Pyridinium, 1-(beta-butoxyethyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 93 and 68% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3880>
CHEMICAL NAME: Pyridinium, 1-(beta-ethoxyethyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 101 and 83% root growth at 10 and 100 ppm, respectively
COMMENTS: Slight growth stimulation at 10 ppm
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3881>
CHEMICAL NAME: Pyridinium, 1-(beta-phenylethyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 102 and 67% root growth at 10 and 100 ppm, respectively
COMMENTS: Slight growth stimulation at 10 ppm
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3882>
CHEMICAL NAME: Pyridinium, 1-(gamma-phenylpropyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 98 and 50% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3883>
CHEMICAL NAME: Pyridinium, 1-(iso-butyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 86 and 74% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3884>
CHEMICAL NAME: Pyridinium, 1-(m-xylyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 52 and 32% cucumber root growth at 10 and 100 ppm, respectively; 84 and 22% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3885>
CHEMICAL NAME: Pyridinium, 1-(n-decyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 23 and 2% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3886>
CHEMICAL NAME: Pyridinium, 1-(n-dodecyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 25 and 2% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3887>
CHEMICAL NAME: Pyridinium, 1-(n-heptyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 63 and 10% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3888>
CHEMICAL NAME: Pyridinium, 1-(n-hexyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 72 and 34% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3889>
CHEMICAL NAME: Pyridinium, 1-(n-octyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 37 and 5% cucumber root growth at 10 and 100 ppm, respectively; 65 and 13% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3890>
CHEMICAL NAME: Pyridinium, 1-(n-tetradecyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 43 and 4% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3891>
<3891>
CHEMICAL NAME: Pyridinium, 1-(p-ethylbenzyl)-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 65 and 23% cucumber root growth at 10 and 100 ppm, respectively; 58 and 16% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3892>
CHEMICAL NAME: Pyridinium, 1-(p-iospropylbenzyl)-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 48 and 7% cucumber root growth at 10 and 100 ppm, respectively; 70 and 9% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3893>
CHEMICAL NAME: Pyridinium, 1-(p-sec-amylbenzyl)-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 25 and 4% cucumber root growth at 10 and 100 ppm, respectively; 22 and 3% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3894>
CHEMICAL NAME: Pyridinium, 1-(p-sec-amylbenzyl)-2-methyl-5-ethyl-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 27 and 4% cucumber root growth at 10 and 100 ppm, respectively; 36 and 7% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3895>
CHEMICAL NAME: Pyridinium, 1-(1-naphthylmethyl)-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 57 and 13% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3896>
CHEMICAL NAME: Pyridinium, 1-(2-chloroethyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 92 and 68% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3897>
CHEMICAL NAME: Pyridinium, 1-(2-cyclohexylethyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TPITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 66 and 32% cucumber root growth at 10 and 100 ppm, respectively; 78 and 34% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3898>
CHEMICAL NAME: Pyridinium, 1-(2-ethylhexyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 72 and 20% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3899>
CHEMICAL NAME: Pyridinium, 1-(2-hydroxyethyl)-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 82 and 60% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3900>
CHEMICAL NAME: Pyridinium, 1-(2,4-dichlorobenzyl)-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 69 and 26% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3901>
CHEMICAL NAME: Pyridinium, 1-(2,4-diethylbenzyl)-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 53 and 5% cucumber root growth at 10 and 100 ppm, respectively; 38 and 4% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3902>
CHEMICAL NAME: Pyridinium, 1-(2,4-diisopropylbenzyl)-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 26 and 3% cucumber root growth at 10 and 100 ppm, respectively; 30 and 5% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3903>
<3903>
CHEMICAL NAME: Pyridinium, 1-(2,4-dinitrophenyl)-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 86 and 44% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3904>
CHEMICAL NAME: Pyridinium, 1-(3,5,5-trimethylhexyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 42 and 14% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3905>
CHEMICAL NAME: Pyridinium, 1-(3,5,5-trimethylhexyl)-2-chloro-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 81 and 41% cucumber root growth at 10 and 100 ppm, respectively; 98 and 64% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3906>
CHEMICAL NAME: Pyridinium, 1-(3,5,5-trimethylhexyl)-2-methyl-5-ethyl-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 97 and 92% cucumber root growth at 10 and 100 ppm, respectively; 105 and 94% wheat root growth at 10 and 100 ppm, respectively
COMMENTS: Slight wheat root stimulation at 10 ppm
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3907>
CHEMICAL NAME: Pyridinium, 1-(3,5,5-trimethylhexyl)-4-methyl-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 37 and 14% cucumber root growth at 10 and 100 ppm, respectively; 46 and 8% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3908>
CHEMICAL NAME: Pyridinium, 1-(6-cyanohexyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 80 and 54% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3909>
CHEMICAL NAME: Pyridinium, 1-benzyl-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 59 and 36% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3910>
CHEMICAL NAME: Pyridinium, 1-beta-(beta-butoxyethoxy)ethyl-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 99 and 74% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3911>
CHEMICAL NAME: Pyridinium, 1-carbobutoxymethyl-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 99 and 90% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3912>
CHEMICAL NAME: Pyridinium, 1-cyanomethyl-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 97 and 73% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3913>
CHEMICAL NAME: Pyridinium, 1-dodecyl-, chloride
CHEMICAL COMMON NAME: Lauryl pyridinium chloride
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<3914>
CHEMICAL NAME: Pyridinium, 1-ethyl-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 94 and 65% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3915>
<3915>
CHEMICAL NAME: Pyridinium, 1-methoxymethyl-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 89 and 61% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3916>
CHEMICAL NAME: Pyridinium, 1-methyl-, iodide
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 86 and 10% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3917>
CHEMICAL NAME: Pyridinium, 1-methyl-, p-toluenesulfonate
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 81 and 40% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3918>
CHEMICAL NAME: Pyridinium, 1-methyl-4-phenyl-
CHEMICAL COMMON NAME: Cyperquat
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: BB6 and BB3 formulations; late spring, early summer and midsummer tratments; spray applications at rate of 50 gpa
EXPERIMENTAL CONDITIONS: Treatments to bluegrass sod and to plots of only nutsedge; 4 x 5 ft plots with 3 replications
EFFECTS: Late spring--2 lb/A gave poor (soil area) to moderate (grass area) nutsedge control and minor turfgrass injury, 4 lb/A showed moderate (soil area) to good (grass area) nutsedge control but objectionable turfgrass injury; early summer--moderate to good on soil area and good to excellent on grass area, minor turfgrass injury; midsummer--excellent nutsedge control, minor turfgrass injury
COMMENTS: Nutsedge control easier as season progresses; nutsedge easier to control on turfgrass than on bare soil; 1-inch rainfall after second spring application may have reduced effectiveness
REFERENCE: Jagschitz, J.A., "Postemergence Crabgrass and Nutsedge Control in Turfgrass with Herbicides," Proc. Northeast. Weed Sci. Soc. 29:376-381 (1975).

<3919>
CHEMICAL NAME: Pyridinium, 1-methyl-4-phenyl-
CHEMICAL COMMON NAME: Cyperquat
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 4.5 lb/A
APPLICATION METHODS: Postemergence spray; 15 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of nutsedge
COMMENTS: Cyperquat and bentazon in postemergence application most effective herbicides, and CGA-24705 and U-44344 in preplant incorporated application most effective; perfluidone most effective preemergence application
REFERENCE: Kurtz, W.L. and E.W. Stroube, "Control of Yellow Nutsedge by Various Herbicides," Proc. N. Cent. Weed Contr. Conf. 30:59 (1975).

<3920>
CHEMICAL NAME: Pyridinium, 1-methyl-4-phenyl-
CHEMICAL COMMON NAME: Cyperquat
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 2.24 and 4.48 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: Poor control of broadleaf weeds and grass in postemergence application; slight tomato phytotoxicity
COMMENTS: Metribuzin, napropamide and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<3921>
CHEMICAL NAME: Pyridinium, 1-methyl-4-phenyl-
CHEMICAL COMMON NAME: Cyperquat
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS); Bermudagrass, Tifton (CYNODON sp.); Bermudagrass, common (CYNODON DACTYLON); Zoysiagrass (ZOYSIA JAPONICAA); Centipede grass (EREMOCHLOA OPHIUROIDES); St. Augustine's grass (STENOTAPHRUM SECUNDUN)
EXPERIMENTAL DOSE: 3.4 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l/ha; one or two applications
EXPERIMENTAL CONDITIONS: Field study, soils--Cecil sandy loam, Cecil sandy clay loam, and Appling sand clay loam; greenhouse study; turfgrasses grown in 3.7 l pots
EFFECTS: Effective nutsedge control in spring and summer applications with minor damage to turfgrasses which recovered within 9 wk
COMMENTS: Purple nutsedge control during initial year of treatment was 98 to 100% when bentazon applied in late spring, but control only 28 to 68% when applied in mid or late summer; perfluidone controlled 76 to 87% of purple nutsedge when applied in late spring and 95 to 100% when applied in late summer; bentazon treatments generally did not cause turf injury; in the field, perfluidone treatments injured St. Augustinegrass, zoysia grass, centipedegrass, and common bermudagrass
REFERENCE: Johnson, B.J., "Purple Nutsedge Control with Bentazon and Perfluidone in Turfgrasses," Weed Sci. 23(5):349-353 (1975).

<3922>
CHEMICAL NAME: Pyridinium, 1-methyl-4-phenyl-
CHEMICAL COMMON NAME: Cyperquat
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 3.0 kg/ha
APPLICATION METHODS: Postemergence spray application with soil incorporation by rototilling; 335 l/ha
EXPERIMENTAL CONDITIONS: Field application; removal of surviving tubers to greenhouse; evaluation time--6 wk (count of tuber germination)
EFFECTS: Moderately reduced tuber germination
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<3923>
CHEMICAL NAME: Pyridinium, 1-methyl-4-phenyl-
CHEMICAL COMMON NAME: Cyperquat
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 3.0 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha; 0.5% Biofilm added
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: Reduced tuber numbers and dry weight; no recovery up to 43 days
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<3924>
CHEMICAL NAME: Pyridinium, 1-methyl-4-phenyl-
CHEMICAL COMMON NAME: Cyperquat
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 5% (W/V)
APPLICATION METHODS: Droplet application to shoots (0.5 ml); amine formulation
EXPERIMENTAL CONDITIONS: Pot culture outside; evaluation time--3, 5, and 7 wks; tubers removed and placed in vermiculite for further study
EFFECTS: Reduced tuber numbers and % germination
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<3925>
CHEMICAL NAME: Pyridinium, 1-methyl-4-phenyl-
CHEMICAL COMMON NAME: Cyperquat
PLANT: Groundnut (PANAX TRIFOLIUM); (PANICUM ZIZANOIDES); (SORGHUM VERTICILLIFLORUM); (PHYLLANTHUS AMARUS); Nutsedge, purple (CYPERUS ROTUNDUS); (LAGASCEA MOLLIS); Spurge (EUPHORBIA sp.); (KALLSTROEMIA MAXIMA); Sandbur (CENCHRUS ECHINATUS); Morningglory (IPOMOEA sp.)
EXPERIMENTAL DOSE: 3.3 kg/ha
APPLICATION METHODS: Postemergence treatment
EXPERIMENTAL CONDITIONS: Field experiment
EFFECTS: Good control of purple nutsedge; no effect other than temporary scorch on other weeds; slight scorch to groundnut
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<3926>
<3926>
CHEMICAL NAME: Pyridinium, 1-methyl-4-phenyl-
CHEMICAL COMMON NAME: Cyperquat
PLANT: Potato (SOLANUM TUBEROSUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 1.0 to 4.0 lb/A
APPLICATION METHODS: Preemergence, pre-plant incorporated, or postemergence sprays; 30 to 35 lb/sq in at 18 to 43 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Haven loam
EFFECTS: Postemergence application, 2.0 lb/A--moderate control of nutsedge and no control of barnyardgrass with slight damage of potato
COMMENTS: Outstanding treatments were CGA 24705 applied preemergence or pre-soil incorporated, maintaining 80% control or better for at least three months; results excellent also with EPTC, alachlor, napropamide, and FMC 25213; several herbicides in combination also effective
REFERENCE: Selleck, G.W. and L.E. Weber, "Herbicide Trials for Yellow Nutsedge in Potatoes on Long Island," Proc. NE Weed Sci. Soc. 30:239-242 (1976).

<3927>
CHEMICAL NAME: Pyridinium, 1-methyl-4-phenyl-
CHEMICAL COMMON NAME: Cyperquat
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 3.3 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Slight control of weeds and slight adverse effect on peanut vigor
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit further testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<3928>
CHEMICAL NAME: Pyridinium, 1-methyl-4-phenylpyridinium-, chloride
CHEMICAL COMMON NAME: S-21634
PLANT: Aeschynomene (AESCHYNOMENE AMERICANA); Amaranth (AMARANTHUS VIRIDIS); Sedge, annual (CYPERUS COMPRESSUS); Carpetweed (MOLLUGO VERTICILLATA); Crabgrass, large (DIGITARIA SANGUINALIS); Dogfennel (EUPATORIUM CAPILLIFOLIUM); Eclipta (ECLIPTA ALBA); Goosegrass (ELEUSINE INDICA); Groundcherry (PHYSALIS ANGULATA); Indigo, hairy (INDIGOFERA HIRSUTA); Hydrocotyle (HYDROCOTYLE UMBELLATA); Jussiacea (JUSSIACEA ANGUSTIFOLIA); Knotgrass (PASPALUM DISTICHUM); Nightshade, black (SOLANUM NIGRUM); Nutsedge, purple (CYPERUS ROTUNDUS); Sesbania, hemp (SESBANIA EXALTATA); Ryegrass, perennial (LOLIUM PERENNE); Spurge (EUPHORBIA sp.); Vaseygrass (PASPALUM URVILLEI); Petunia (PETUNIA HYBRIDA); Ageratum (AGERATUM HOUSTONIANUM); Gladiolus (GLADIOLUS GRANDIFLORUS)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: 3% EC formulation; June 15, July 13, and August 17 treatments
EXPERIMENTAL CONDITIONS: Field experiments; randomized complete block design; Myakka fine sand; plot size 279 sq. ft.; treatments replicated 4 times; 18 petunias, 18 ageratums and 25 gladiolus transplanted October 1; soil samples collected throughout experiment, ryegrass seeds sown to test residual activity; weed density assessed November 15
EFFECTS: Good control--aeschynomene, annual sedge, carpetweed, dogfennel, goosegrass, and sesbania; poor control--amaranth, eclipta, hydrocetyle, poor to moderate control of other plants; knotgrass, nutsedge, spurge, and vaseygrass; fresh weights of flowers similar to respective controls; no significant difference in ryegrass height and density compared to control
REFERENCE: Wilfret, G.J. and D.S. Burgis, "Weed Control in Petunia, Ageratum, and Gladiolus Grown in Open Fields," Proc. South. Weed. Sci. Soc. 30:197-204 (1977).

<3929>
CHEMICAL NAME: Pyridinium, 1-methyl-4-phenylpyridinium-, chloride
CHEMICAL COMMON NAME: S-21634
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Moderate to effective control of nutsedge; slight effect on bluegrass
COMMENTS: Promising results with BAS-3510, BAS-3516; DSMA; MBR-8251, and S-21634; some turf injury noted for 2,4-D, MBR-8251, and S-21634
REFERENCE: Jagschitz, J.A., "Evaluation of Herbicides for Nutsedge Control in Turfgrass," Proc. Northeast. Weed Sci. Soc. 27:331-333 (1973).

<3930>
CHEMICAL NAME: Pyridinium, 1-phenacyl-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 89 and 82% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3931>
CHEMICAL NAME: Pyridinium, 1-propargyl-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 99 and 48% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3932>
CHEMICAL NAME: Pyridinium, 1-propyl-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 93 and 64% root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3933>
CHEMICAL NAME: Pyridinone, 1-methyl-3-phenyl-5[3-(trifluoromethyl)-phenyl]-4(1H)-
CHEMICAL COMMON NAME: EL-171
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 0.025, 0.05, 0.1, 0.2, 0.4, 0.5, 0.8, and 1.6 kg/ha
APPLICATION METHODS: Greenhouse trial--preplanting surface and incorporated and postemergent over-the top treatments; field trial--preplanting incorporated and postemergence directed treatments; all treatments applied at 187 l./ha in water
EXPERIMENTAL CONDITIONS: Greenhouse trial--0.025, 0.05, 0.1, 0.2, and 0.4 kg/ha rates, preplanting soil treatments to surface of 8 cm soil, incorporated in 8 cm soil, incorporated in bottom 4 cm of 8 cm soil depth, and incorporated in top 4 cm of 8 cm soil depth, soil treated plants maintained for 8 wk, foliar spray at 0.5 kg plus 0, 1, and 2% surfactant nonoxynol, foliar treated plants maintained for 4 weeks; field trial--0.4, 0.8, and 1.6 kg/hg preplanting incorporated and 0.5 kg/ha postemergence directed spray to 5 to 7 cm tall cotton plants with and without 1% surfactant; sandy loam soils
EFFECTS: Greenhouse--98% nutsedge control at 0.1 kg/ha or above with preplanting incorporated treatments, surface treatments gave less nutsedge control and sprays injured cotton at effective rates; 2% surfactant increased cotton injury to unacceptable levels; field--incorporated treatments gave 96% control at 1.6 kg/ha with no apparent cotton injury; poor control with postemergence directed sprays
COMMENTS: From results, EL 171 effective for control of purple nutsedge in cotton at approximately 1 kg/ha in sandy loam soils
REFERENCE: Wills, G.D., "Effect of EL-171 on Cotton and Purple Nutsedge," Proc. South. Weed Sci. Soc. 30:113-118 (1977).

<3934>
CHEMICAL NAME: Pyridinone, 1-methyl-3-phenyl-5[3-(trifluoromethyl)-phenyl]-4(1H)-
CHEMICAL COMMON NAME: E1 171
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Broadleaf weeds; Annual grasses; Morningglory (IPOMOEA sp.); Cocklebur, common (XANTHIUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI)
EXPERIMENTAL DOSE: Coarse soil--0.2 to 0.4 lb/A; medium soil--0.3 to 0.6 lb/A; fine soil--0.4 to 0.8 lb/A
APPLICATION METHODS: Preplanting treatments; 4 lb/gal EC and 50% WP formulations
EFFECTS: Excellent control of most annual grasses and broadleaf weeds; difficult-to-control broadleaves such as morningglory, cocklebur, and velvetleaf require higher rates; some perrenial grasses also controlled at higher rates; excellent tolerance by cotton
COMMENTS: No experiments described, brief report on new herbicide
REFERENCE: Waldrep, T.W. and H.M. Taylor, "E1-171, a New Selective Broad Spectrum Herbicide for Cotton," Proc. South. Weed Sci. Soc. 30:401 (1977).

<3935>
CHEMICAL NAME: Pyridone, 2(1H)-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 2.0 to greater than 1.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3936>
<3936>
CHEMICAL NAME: Pyridone, 3-hydroxy-2(1H)-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: Greater than 3.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: No inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<3937>
CHEMICAL NAME: Pyrimidine, 1-(2-ethylhexyl)-2-undecyl-1,4,5,6-tetrahydro-
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 100 ppm
APPLICATION METHODS: Germination in 5 cc. water solution containing test compound
EXPERIMENTAL CONDITIONS: Seeds germinated in Petri plates, 10 seeds per plate; 4 days growth in air-conditioned dark room at 24 C and 88% relative humidity--seedlings removed and shoots and roots measured
EFFECTS: 63% wheat root inhibition, 69% radish root inhibition
COMMENTS: Test compound closely related to imidazoline compounds; chemical structure given in paper
REFERENCE: Allen, S.E. and F. Skoog, "Phytotoxicity of Imidazoline Derivatives and Related Compounds," Plant Physiol. 26:611-624 (1951).

<3938>
CHEMICAL NAME: Pyrimidine, 2-(benzylthio)-4,6-dimethyl-
CHEMICAL COMMON NAME: R-3400
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants; Pepper, pimento
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Undefined effect on crop plants or poor weed control (not given) or both; eliminated from further consideration for these crops
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<3939>
CHEMICAL NAME: Pyrimidine, 2-[(3,4-dichlorobenzyl)thio]-4,6-dimethyl-
CHEMICAL COMMON NAME: R-3441
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants; Pepper, pimento
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Undefined effect on crop plants or poor weed control (not given) or both; eliminated from further consideration for these crops
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<3940>
CHEMICAL NAME: Pyrimidine, 2-[p-chlorobenzyl)thio]-4,6-dimethyl-
CHEMICAL COMMON NAME: R-3408
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants; Pepper, pimento
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Undefined effect on crop plants or poor weed control (not given) or both; eliminated from further consideration for these crops
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<3941>
CHEMICAL NAME: Pyrimidine, 4-hydroxy-2-mercapto-6-methyl-
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1x10(-3) M
APPLICATION METHODS: 96-hr treatment at 25 C
EXPERIMENTAL CONDITIONS: Primary root elongation inhibition determined
EFFECTS: 50% root growth inhibition
REFERENCE: Klingensmith, M.J., "The Effect of Certain Benzazole Compounds on Plant Growth and Development," Am. J. Bot. 48:40-45 (1961).

<3942>
CHEMICAL NAME: Pyrimidine, 5-amino-1,3-bis(1,1-dimethyl-2-hydroxyethyl)-5-methylhexahydro-
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 100 ppm
APPLICATION METHODS: Germination in 5 cc. water solution containing test compound
EXPERIMENTAL CONDITIONS: Seeds germinated in Petri plates, 10 seeds per plate; 4 days growth in air-conditioned dark room at 24 C and 88% relative humidity--seedlings removed and shoots and roots measured
EFFECTS: No wheat root inhibition, 4% radish root inhibition
COMMENTS: Test compound closely related to imidazoline compounds; chemical structure given in paper
REFERENCE: Allen, S.E. and F. Skoog, "Phytotoxicity of Imidazoline Derivatives and Related Compounds," Plant Physiol. 26:611-624 (1951).

<3943>
CHEMICAL NAME: Pyrimidine, 5-amino-1,3-bis(1,3-dimethylbutyl)-5-methylhexahydro-
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 100 ppm
APPLICATION METHODS: Germination in 5 cc. water solution containing test compound
EXPERIMENTAL CONDITIONS: Seeds germinated in Petri plates, 10 seeds per plate; 4 days growth in air-conditioned dark room at 24 C and 88% relative humidity--seedlings removed and shoots and roots measured
EFFECTS: 51% wheat root inhibition, 56% radish root inhibition
COMMENTS: Test compound closely related to imidazoline compounds; chemical structure given in paper
REFERENCE: Allen, S.E. and F. Skoog, "Phytotoxicity of Imidazoline Derivatives and Related Compounds," Plant Physiol. 26:611-624 (1951).

<3944>
CHEMICAL NAME: Pyrimidinedione, 2,4(1H,3H)-
CHEMICAL COMMON NAME: Uracil
PLANT: Crabgrass (DIGITARIA sp.); Sorghum (SORGHUM BICOLOR); Oat, wild (AVENA FATUA); Nutsedge (CYPERUS sp.); Mustard (BRASSICA sp.); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No adverse effect
COMMENTS: Substituted uracils are highly phytotoxic to wide variety of plants; compounds have low mammalian toxicity, and promise to become economically important herbicides
REFERENCE: Bucha, H.C., W.E. Cupery, J.E. Harrod, H.M. Loux, and L.M. Ellis, "Substituted Uracil Herbicides," Science 137:537-538 (1962).

<3945>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-2,4(1H,3H)-
CHEMICAL COMMON NAME: 5-BU
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 1x10(-3) M
APPLICATION METHODS: Solution soak of seed
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--21 to 23 C; light intensity--200 ft c; evaluation time--1, 3, and 5 da
EFFECTS: No adverse effect on germination or seedling growth
COMMENTS: Germination of lettuce seeds inhibited by 2-thiouracil up to 24 hours; inhibition reversed by RNA precursors only; seedling growth of lettuce inhibited by 2-thiouracil and 5-fluorouracil; while effect of 2-thiouracil counteracted by RNA precursors, inhibition due to 5-fluorouracil not reversed significantly by any nucleic acid precursors
REFERENCE: Khan, A.A., "Inhibition of Lettuce Seed Germination and Seedling Growth by Antimetabolites of Nucleic Acids, and Reversal by Nucleic Acid Precursors and Gibberelic Acid," Planta (Berl.) 68:83-87 (1966).

<3946>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-2,4(1H,3H)-
CHEMICAL COMMON NAME: 5-BU
PLANT: Crabgrass (DIGITARIA sp.); Sorghum (SORGHUM BICOLOR); Oat, wild (AVENA FATUA); Nutsedge (CYPERUS sp.); Mustard (BRASSICA sp.); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No adverse effect
COMMENTS: Substituted uracils are highly phytotoxic to wide variety of plants; compounds have low mammalian toxicity, and promise to become economically important herbicides
REFERENCE: Bucha, H.C., W.E. Cupery, J.E. Harrod, H.M. Loux, and L.M. Ellis, "Substituted Uracil Herbicides," Science 137:537-538 (1962).

<3947>
<3947>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-3-(1,1-dimethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: 733
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect noted
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3948>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylethyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Isocil
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect noted
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3949>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylethyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Isocil
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6)M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.31 to 5.38 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<3950>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylethyl),2,4(1H,3H)-
PLANT: Crabgrass (DIGITARIA sp.); Sorghum (SORGHUM BICOLOR); Oat, wild (AVENA FATUA); Nutsedge (CYPERUS sp.); Mustard (BRASSICA sp.); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Total kill of all plants
COMMENTS: Substituted uracils are highly phytotoxic to wide variety of plants; compounds have low mammalian toxicity, and promise to become economically important herbicides
REFERENCE: Bucha, H.C., W.E. Cupery, J.E. Harrod, H.M. Loux, and L.M. Ellis, "Substituted Uracil Herbicides," Science 137:537-538 (1962).

<3951>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 0.6 and 1.1 kg/ha
APPLICATION METHODS: Granular application with calibrated 0.9m-wide lawn spreader; postemergence applications in July, September, and March
EXPERIMENTAL CONDITIONS: Emory clay loam soil; 4 year experiment with fourth year used to determine recovery -- no herbicide application; randomized complete block design with 3 replications and a check; plots measured 0.9 by 4.8 m with 0.3-m border between plots; no border between replications; injury determined by sod loss and foliar damage; lowest rates of application halved, plots treated with high rates applied four times
EFFECTS: First year -- slight to moderate contact burn, recovery later in year; second year -- some foliar browning and sod loss; third year -- moderate to severe foliar injury, sod loss persisting into fall dormancy; fourth year -- no persisting foliage injury to sod loss
COMMENTS: In general, herbicide effectiveness increases with consecutive annual applications
REFERENCE: Callahan, L.M., "Phytotoxicity of Herbicides to a Tifgreen Bermudagrass Green," Weed Sci. 24(1):92-98(1976).

<3952>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Plants
EXPERIMENTAL DOSE: 5, 10, and 20 lb/A
APPLICATION METHODS: Hand broadcast (G and pellets) or sprayed postemergence (WP); 85% G and 80% WP formulations
EXPERIMENTAL CONDITIONS: Field study; old-field test sites
EFFECTS: Effective control of weeds at highest rate; WP generally more effective than G formulation
COMMENTS: Total vegetation control of all species increased directly with increased rate of herbicide; most complete control occurred with bromacil, karbutilate, and picloram plus diuron.
REFERENCE: Shipman, R.D., "Soil-Applied Herbicides in the Control of Native Broadleaf Weeds and Grasses," Proc. Northeast. Weed Sci. Soc. 28:331-334 (1974).

<3953>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect noted
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<3954>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Pimpernel, common (ANAGALLIS ARVENSIS); Crunchweed (SINAPIS ARVENSIS); Pigweed (AMARANTHUS sp.); Bindweed, field (CONVOLVULUS ARVENSIS); Mustard, black (BRASSICA NIGRA)
EXPERIMENTAL DOSE: 4.0 and 8.0 kg/ha
APPLICATION METHODS: Postemergence application; 200 l./ha; trifluralin and chlorthal-dimethyl incorporated by rototilling; all others not incorporated
EXPERIMENTAL CONDITIONS: Field study; plots sprayed twice a year over a 4-year period; sprinkler irrigation; greenhouse study; residues determined by mustard bioassay
EFFECTS: Effective control of all weeds at 8.0 lb/ha and all weeds except A. COERULEA at 4.0 lb/ha; strong residual toxicity to mustard
COMMENTS: Phytotoxicity to weeds in decreasing order: diuron, bromacil, simazine, trifluralin, prometryne, neburon, fluometuron, pyrazon, diphenamid, chlorthal-dimethyl; persistence of herbicides in decreasing order: diuron, bromacil, simazine, neburon, fluometuron, trifluralin, prometryne; control produced by pyrazon improved with the number of applications, but that of diphenamid and chlorthal-dimethyl remained weak and short
REFERENCE: Horowitz, M., T. Blumenfeld, G. Herzlinger, and N. Hulin, "Effects of Repeated Applications of Ten Herbicides on Weed Population, Residue Accumulation and Nitrification," Weed Res. 14(2):97-109 (1974).

<3955>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat, and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in sorghum, oat, and cucumber at 1 and 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<3956>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: White top (PARTHENIUM HYSTEROPHORUS)
EXPERIMENTAL DOSE: 1, 2 and 4 kg/ha
APPLICATION METHODS: Treatment at flowering stage
EXPERIMENTAL CONDITIONS: Field trials, well replicated; time--February to May 1971
EFFECTS: 1 kg/ha not effective; 2 kg/ha effective in killing white top at flowering stage
REFERENCE: Jayachandra, "Parthenium Weed in Myore State and its Control," Curr. Sci. 40(1):568-569 (1971).

<3957>
<3957>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Galinsoga (GALINSOGA PARVIFLORA); (LAGASCEA MOLLIS); (CYNOTIS AXILLARIS); Spurge (EUPHORBIA GENICULATA); Sorrell, creeping wood (OXALIS CORNICULATA); Tick-trefoil (DESMODIUM TORTUOSUM); Chickweed (AGERATUM CONYZOIDES); (TRIDAX PROCUMBENS); Marigold, bur (BIDENS PILOSA)
EXPERIMENTAL DOSE: 1.2 and 3.36 kg/ha
APPLICATION METHODS: Spray application
EXPERIMENTAL CONDITIONS: Flower gardens; second spray application when necessary; replicated areas of 1 m diameter
EFFECTS: Control at 1.12 kg/ha of L. MOLLIS, G. PARVIFLORA, E. GENICULATA, C. AXILLARIS, and O. CORNICULATA with one spraying; T. PROCUMBENS and A. CONYZOIDES required second spraying at 1.12 kg/ha; second spraying at 3.36 kg/ha required for control of B. PILOSA and D. TORTUOSUM
COMMENTS: D. TORTUOSUM, hardiest of weeds studied
REFERENCE: Jayachandra and V. Menon, "Post-Emergent Control of Dicot Weeds with Bromacil," Curr. Sci. 49(3):120 (1972).

<3958>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Plants
EXPERIMENTAL DOSE: 5.0 lb/A
APPLICATION METHODS: Postemergence spray; two applications
EXPERIMENTAL CONDITIONS: Field study, road cracks and road right-of-way
EFFECTS: No adverse effect noted
COMMENTS: Initial postpaving treatment made with beginning of growth in spring; TCA applied at rate of 24 lb/ft-mile, and subsequent applications made as needed; treatment interval about 30 days
REFERENCE: McCully, W. G., W. J. Bowmer, and A. F. Wiese, "Control of Grasses and Weeds Growing in Asphalt Pavements," PANS 16(3):497-504 (1970).

<3959>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Cogongrass (IMPERATA CYLINDRICA)
EXPERIMENTAL DOSE: 6.7, 13.4, and 26.9 kg/ha; 0.5% surfactant
APPLICATION METHODS: Postemergence spray; 300 l./ha; 0.5% surfactant
EXPERIMENTAL CONDITIONS: Field study; pure cogongrass stands in near-dormant state; time period--1971 and 1972
EFFECTS: Effective control at both rates but regrowth after one year occurred
COMMENTS: All soil sterilants provided acceptable control; single applications of TCA and dalapon controlled cogongrass without prolonged soil sterility
REFERENCE: Dickens, R. and G.A. Buchanan, "Control of Cogongrass with Herbicides," Weed Sci. 23(3):194-197 (1975).

<3960>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Smutgrass (SPOROBOLUS POIRETII); Bermudagrass, common (CYNODON DACTYLON); Carpetgrass (AXONOPUS AFFINS)
EXPERIMENTAL DOSE: 1.1 and 2.2 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l./ha; one, two, or three applications
EXPERIMENTAL CONDITIONS: Field study; soil--Tifton loamy sand; warm and cool weather applications studied; evaluation time--6 to 12 wk
EFFECTS: Effective control of smutgrass at 1.1 kg/ha (two applications) but damage to turfgrasses; combination of bromacil and diuron gave similar results; warm weather study only
COMMENTS: MSMA applied alone or in combination with 2,4-D in each of three applications controlled at least 70% of smutgrass in two of three experiments; common bermudagrass showed signs of atrazine injury during first 6 weeks after treatment but injury not evident following year; MSMA alone or in combination with 2,4-D killed carpetgrass in all experiments
REFERENCE: Johnson, B.J., "Smutgrass Control with Herbicides in Turfgrasses," Weed Sci. 23(2):87-90 (1975).

<3961>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Bromegrass, smooth (BROMUS INERMIS); Grama, sideoats (BOUTELOUA CURTIPENDULA); Indian grass (SORGHASTRUM NUTANS); Switchgrass (PANICUM VIRGATUM); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.1, 3.4, and 6.7 kg/ha
APPLICATION METHODS: Postemergence spray; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Sharpsburg silty clay loam; forage grasses treated and soil at different depths (0-8, 8-15, and 15-30 cm) removed at different times (4 and 16 mos) for greenhouse bioassay using soybean
EFFECTS: Generally severly reduced growth of soybean at all rates in soil only at 0-8 cm depth for 4 and 16 mos with visible injury to bromegrass at all rates and visible injury to sideoats grams at 6.7 kg/ha with no injury to remaining forage grasses
COMMENTS: Most herbicide residues 4 or 16 months after application located in the 0- to 8-cm soil depth; only bromacil, or terbacil at high rates depressed soybean growth in soil from the 8- to 15-cm depth
REFERENCE: Morrow, L.A. and M.K. McCarty, "Selectivity and Soil Persistence of Certain Herbicides Used on Perennial Forage Grasses," J. Envir. Qual. 5(4):462-465 (1976).

<3962>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Oak, post (QUERCUS STELLATA); Oak, blackjack (QUERCUS MARILANDICA); Hickory, mockernut (CARYA TOMENTOSA); Huckleberry (GAYLUSSACIA BACCATA); Beautyberry, American (CALLICARPA AMERICANA); Sassafras (SASSAFRAS ALBIDUM)
EXPERIMENTAL DOSE: 5.6 and 11.2 kg/ha
APPLICATION METHODS: 3 patterns of application--(1) in 14 bands each 30 cm wide and 20 m long spaced 1.2 m apart, edge to edge; (2) in 14 spots 30 cm diameter and at 1.2 m intervals, edge to edge, on each of 14 lines 20 m long; and (3) broadcast uniformly over plot; formulation--10% concentration in pellets
EXPERIMENTAL CONDITIONS: Ruston sandy loam; 12 treatments replicated three times in randomized complete block designs; 20 m square plots 7.6 m apart; sufficient rainfall for adequate herbicide leaching; woody plants along 1.5 m transect of each plot observed for crown reduction after 2 growing seasons
EFFECTS: Post oak--satisfactory crown reduction from all application methods at both rates; blackjack oak--satisfactory crown reduction at both rates except for broadcast application (marginal crown reduction); hickory--satisfactory crown reduction at 11.2 kg/ha, unsatisfactory reduction at 5.6 kg/ha; huckleberry--unsatisfactory crown reduction; beautyberry--unsatisfactory crown reduction; sassafras--unsatisfactory crown reduction except 11.2 kg/ha spot application (satisfactory reduction)
COMMENTS: 91 to 100% crown reduction satisfactory, 85 to 90% reduction marginal, and under 85% unsatisfactory; oaks and hickory are overstory species, other plants are understory species; bromacil superior to picloram for oak crown reduction, reverse is true for understory species
REFERENCE: Peevy, F.A., "Bromacil and Picloram Under Southern Upland Hardwoods," Weed Sci. 21(1):54-56 (1973).

<3963>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 0.40 to 4.00 lb/A
APPLICATION METHODS: Foliar spray; varied rates and combinations
EXPERIMENTAL CONDITIONS: Field study; time period--1969 to 1972
EFFECTS: Severe damage to strawberry
COMMENTS: Terbacil applied in February gave excellent control of perennial grasses in strawberries; terbacil in August caused no reduction in crop yield but did not give good control of grasses; pronamide in October gave moderate control of grass weeds but caused reduction in crop yield
REFERENCE: Rath, N. and T.F. O'Callaghan, "Further Experiments With Herbicides for the Control of Perennial Grass Weeds in Strawberries," Proc. 11th. Br. Weed Cont. Conf. 11(1):398-405 (1972).

<3964>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time--11 da
EFFECTS: Minimum lethal concentration 6.72 and 6.31 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<3965>
CHEMICAL NAME: Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-
CHEMICAL COMMON NAME: Bromacil
PLANT: Guineagrass (PANICUM MAXIMUM); Vaseygrass (PASPALUM URVILLEI); Bermudagrass, common (CYNODON DACTYLON); Torpedograss (PANICUM REPENS); Bahiagrass (PASPALUM NOTATUM); Paragarss (PANICUM PURPURASCENS)
EXPERIMENTAL DOSE: 4 and 4.8 lb/A and 3 lb/100 gal
APPLICATION METHODS: Postemergence--4 lb A in 100 gpa water, 4 lb/A in 92 gpa water, and 3 lb/100 gal
EXPERIMENTAL CONDITIONS: 3 field experiments; grasses normally found in citrus groves; 1971 and 1972 tests
EFFECTS: Torpedo--control no satisfactory; bermuda--good control; vasey--poor control; bahia--good control at 6 wk., fair control at 12 wk; para--fair control at 6 wk, good at 12 wk; guinea--no control
COMMENTS: Glyphosate, best herbicide tested; suggestion for prolonged weed control--glyphosate (systemic herbicide) in combination with soil sterilants
REFERENCE: Phillips, R.L., "Control of Perennial Grasses in Citrus Groves," Citrus Ind. 54(7):22-23 (1973).

<3966>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Triallate
PLANT: Ryegrass, wimmera (LOLIUM RIGIDUM); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.56 kg/ha
APPLICATION METHODS: Preplant and preemergence incorporated by harrowing; 112 to 280 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils-- Wimmera clay, Rutherglen loam, and Currawa loam; soil pH--6.9-7.0; time period-- 1962 to 1968
EFFECTS: Effective control of ryegrass with no adverse effect on wheat yield; preplant more effective
COMMENTS: Di-allate and tri-allate gave preemergence control of Wimmera ryegrass in wheat; at similar rates, di-allate generally gave greater reduction of ryegrass population than did tri-allate; a number of situations where reduction in ryegrass population not followed by significant yield increase
REFERENCE: Reeves, T.G. and C.L. Tuohey, "The Selective Chemical Control of Wimmera Rye Grass in Wheat With Di-Allate and Tri-Allate," Aust. J. Exp. Agric. Anim. Husb. 12(54):55-59 (1972).

<3967>
<3967>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Terbacil
PLANT: Broadleaf weeds; Grasses; Bermudagrass, common (CYNODON DACTYLON); Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.24 and 4.48 kg/ha
APPLICATION METHODS: Postemergence spray; 170 l/ha
EXPERIMENTAL CONDITIONS: Field study; time period--1966 to 1968; soil residues studied
EFFECTS: Effective control of all weeds at both rates with no adverse effects on peach tree growth; incorporation improved effectiveness
COMMENTS: Average monthly ratings showed significant increases in bermudagrass control with incorporation of all three herbicides; tree-trunk diameters in incorporated dichlobenil plots greater than those in surface-applied dichlobenil plots; incorporation in soil reduced loss of dichlobenil, terbacil, and DP-733.
REFERENCE: Skroch, W.A., T.J. Sheets, and J.W. Smith, "Herbicide Effectiveness, Soil Residues, and Phytotoxicity to Peach Trees," Weed Sci. 19(3):257-260 (1971).

<3968>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Terbacil
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lily-turf (LIRIOPE sp.); Plants
EXPERIMENTAL DOSE: 1.6 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 80% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Effective control of all weeds with no adverse effect on LIROPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<3969>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Terbacil
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Plants
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; time period--1967 to 1969; soils--Ramona sandy loam and Greenfield
EFFECTS: Effective weed control at both rates but moderate to severe damage to asparagus
COMMENTS: Chemicals which killed or severely damaged asparagus include monuron, diuron, simazine, sinbar, sindone-b, treflan, tenoran, and CIPC; vegiben marginal; of herbicides tested in these trials for pre-emergence weed control in direct-seeded asparagus, balan, bensulide, and brominal offer most promising results
REFERENCE: Whiting, F.L., F.H. Takatori, and J.M. Lyons, "Weed Control in Asparagus," Calif Agric. 25(1):4-5 (1971).

<3970>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Terbacil
PLANT: Prince of Wales feather (AMARANTHUS POWELLII); Wireweed (POLYGONUM AVICULARE); Cress, pepper (LEPIDIUM HYSSOPIFOLUM); Lettuce, prickly (LACTUCA SCARIOLA); Lamb's-tongue (PLANTAGO LANCEOLATA); Couchgrass (CYNODON DACTYLON); Prairie grass (BROMUS sp.); Love-grass (ERAGROSTIS sp.); Lamb's-quarters (CHENOPODIUM ALBUM); Sowthistle, annual (SONCHUS OLERACEUS); Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.1 and 2.2 kg/ha
APPLICATION METHODS: Late August treatments applied with knapsack sprayer at 30 psi pressure and calibrated to deliver 600 l/ha
EXPERIMENTAL CONDITIONS: 1 year old peach trees; 4 replicates, 2 trees in each plot; sandy clay loam soil; herbicides applied late August for 2 consecutive years; assessments made in December and March of both growing seasons and also in November during the second growing season
EFFECTS: Grass and broadleaf weeds suppressed; 2.2 kg/ha increased tree growth first year, 1.1 kg/ha increased tree growth only in second growing season
COMMENTS: No treatments of paraquat and diquat required to supplement terbacil treatments
REFERENCE: Koffmann, W. and J. Kaldor, "Chemical Weed Control in Young Peach Trees," Aust. J. Exp. Agric. Anim. Husb. 15:566-569 (1975).

<3971>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Terbacil
PLANT: Plants; Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 0.4 - 3.4 kg/ha
APPLICATION METHODS: Sprayed as seedlings were emerging or on scions; 460 or 900 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Berrian fine sandy loam; periodic cultivation and weeding as needed; time period--1969 and 1970
EFFECTS: At 0.8 and 0.9 kg/ha, effective control of weeds with no adverse effect on peach seedlings or scions
COMMENTS: Problem of weed populations that emerge before and with peaches eliminated by all terbacil rates and reduced by simazine; the herbicides as supplement to cultivation did no adversely affect emergence or final stand of budded seedlings in first year, or growth from scion buds in next year; size attained by seedlings and by scion growth under herbicides equal or greater than that under cultivation alone
REFERENCE: Curtis, O.F., "Weed Control in Peach Nurseries with Terbacil," Proc. Northeast. Weed Sci. Soc. 28:213-218 (1974).

<3972>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Terbacil
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat, and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in sorghum, oat, and cucumber at 1 and 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<3973>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Terbacil
PLANT: Broadleaf weeds; Grasses; Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.6, 2.0, 2.4, and 2.5 lb/A
APPLICATION METHODS: Postemergence spray; 25 psi; 44 gal/A
EXPERIMENTAL CONDITIONS: Field study; soils--Lloyd clay loam and Pacerville fine sandy loam (two GA locations); time period--1968 and 1969; trees in center of 16 ft treatment swaths with 8 ft of untreated sod between swaths
EFFECTS: Effective control of weeds with no adverse effect to peach trees
COMMENTS: Several herbicide methods gave season-long weed control without detriment to growth or yield of peach trees
REFERENCE: Daniell, J.W. and W.S. Hardcastle, "Response of Peach Trees to Herbicide and Mechanical Weed Control," Weed Sci. 20(2):133-136 (1972).

<3974>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Terbacil
PLANT: Broadleaf weeds; Grasses; Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence directed spray; 50 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Hartsell's loam; time period--1970 to 1972
EFFECTS: Effective control of all grasses with no adverse effect on apple trees
COMMENTS: Terbacil, simazine+paraquat, and R-7465 treatments effectively controlled annual broadleaf and annual grass weeds during 1971-1972; certain perennial weed species not controlled effectively in the terbacil treated plots; spring and summer applications of glyphosate at three rates provided good contact kill of existing weeds, but reinfestation of plots with annual weeds, especially crabgrass, a problem
REFERENCE: Mullins, C.A., H.D. Swingle, and D.L. Coffey, "Growth and Field Response of Apple Trees to Certain Herbicides," Proc. S. Weed Sci. Soc. 26:225-229 (1973).

<3975>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Terbacil
PLANT: Bromegrass, smooth (BROMUS INERMIS); Grama, sideoats (BOUTELOUA CURTIPENDULA); Indian grass (SORGHASTRUM NUTANS); Switchgrass (PANICUM VIRGATUM); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.1, 3.4, and 6.7 kg/ha
APPLICATION METHODS: Postemergence spray; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Sharpsburg silty clay loam; forage grasses treated and soil at different depths (0-8, 8-15, and 15-30 cm) removed at different times (4 and 16 mos) for greenhouse bioassay using soybean
EFFECTS: Generally severely reduced reduced growth of soybeans at highest rates for up to 16 mos at soil depth down to 15 cm with visible injury to brome at all rates, injury to sideoats grams at 6.7 kg/ha and no injury to remaining grasses
COMMENTS: Most herbicide residues 4 or 16 months after application located in the 0- to 8-cm soil depth; only bromacil, or terbacil at high rates depressed soybean growth in soil from the 8- to 15-cm depth
REFERENCE: Morrow, L.A. and M.K. McCarty, "Selectivity and Soil Persistence of Certain Herbicides Used on Perennial Forage Grasses," J. Envir. Qual. 5(4):462-465 (1976).

<3976>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Terbacil
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.25 to 2.0 kg/ha
APPLICATION METHODS: Preemergence in 350 l./ha water
EXPERIMENTAL CONDITIONS: Field studies; ten soil types--sand, clay loams, silt loams, sandy loam, clay and peat; 3 year period, 43 field trials; bioassay tests in glasshouse with soybeans grown in soils from field tests
EFFECTS: 1 kg/ha showed phytotoxic residues in majority of trials; at 2 kg/ha residues found in every trial; 0.25 kg/ha showed no persistence; phytotoxicity caused growth reduction

<3976>
<3976> CONT.
COMMENTS: Main emphasis of study--residue studies conducted in glasshouse; rain resulted in mobility; organic matter and clay content influenced persistence; conclusion--recommended rates may persist more than one growing season and harm susceptible crops in many situations in New Zealand
REFERENCE: Rahman, A., "Persistence of Terbacil and Trifluralin Under Different Soil and Climatic Conditions," Weed Res. 17:145-152 (1977).

<3977>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Terbacil
PLANT: Strawberry (FRAGARIA sp.); Grasses
EXPERIMENTAL DOSE: 0.5 to 2.0 lb/A
APPLICATION METHODS: Foliar spray; varied rates and combinations
EXPERIMENTAL CONDITIONS: Field study; time period--1969 to 1972
EFFECTS: At 1.6-2.0 lb/A, effective control of grass weeds with no adverse effect on strawberries
COMMENTS: Terbacil applied in February gave excellent control of perennial grasses in strawberries; terbacil in August caused no reduction in crop yield but did not give good control of grasses; pronamide in October gave moderate control of grass weeds but caused reduction in crop yield
REFERENCE: Rath, N. and T.F. O'Callaghan, "Further Experiments With Herbicides for the Control of Perennial Grass Weeds in Strawberries," Proc. 11th. Br. Weed Cont. Conf. 11(1):398-405 (1972).

<3978>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Terbacil
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 0.25 to 1.0 kg/ha
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: At 1.0 kg/ha, reduced shoot weight
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<3979>
CHEMICAL NAME: Pyrimidinedione, 5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-
CHEMICAL COMMON NAME: Terbacil
PLANT: Rose, wild (ROSA sp.); Plants
EXPERIMENTAL DOSE: 1.6 and 2.4 lb/A
APPLICATION METHODS: Postemergence
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At higher rate, chlorosis of rose and effective weed control
COMMENTS: Terbacil, atrazine, propachlor, and aziprotryne gave satisfactory weed control except last two which failed to control cruciferous weeds
REFERENCE: Roberts, L. and D.C. Harris, "Use of Terbacil, Atrazine and Other Herbicides in Bush Rose Production," Proc. 11th. Br. Weed Cont. Conf. 11(2):632-634 (1972).

<3980>
CHEMICAL NAME: Pyrimidinedione, 5-fluoro-2,4(1H,3H)-
CHEMICAL COMMON NAME: 5-FU
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 1x10(-3)M
APPLICATION METHODS: Solution soak of seed
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--21 to 23 C; light intensity--200 ft c; evaluation time--1, 3, and 5 da
COMMENTS: Germination of lettuce seeds inhibited by 2-thiouracil up to 24 hours; inhibition reversed by RNA precursors only; seedling growth of lettuce inhibited by 2-thiouracil and 5-fluorouracil; while effect of 2-thiouracil counteracted by RNA precursors, inhibition due to 5-fluorouracil not reversed significantly by any nucleic acid precursors
REFERENCE: Khan, A.A., "Inhibition of Lettuce Seed Germination and Seedling Growth by Antimetabolites of Nucleic Acids, and Reversal by Nucleic Acid Precursors and Gibberelic Acid," Planta (Berl.) 68:83-87 (1966).

<3981>
CHEMICAL NAME: Pyrimidinedione, 5-fluoro-2,4(1H,3H)-
CHEMICAL COMMON NAME: 5-FU
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.0x10(-3) to 5.0x10(-3)M
APPLICATION METHODS: Immersion in assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated bean seedling leaves; evaluation time--12 to 14 hr
EFFECTS: Inhibited protein synthesis and chloroplast formation
COMMENTS: Inhibitors affected RNA synthesis blocked 2nd stage and arrested proplastid conversion to chloroplasts; plastid division also seemed to stop; inhibition of DNA synthesis blocked 1st stage; proplastids, escaping the stage of division, directly converted to chloroplasts which are, similarly to those formed in the first case, incapable of division
REFERENCE: Beridze, T.G., M.S. Odintsova, N.A. Cherkashina, and M.M. Sissakian, "The Effect of Nucleic Acid Synthesis Inhibitors on the Chlorophyll Formation by Etiolated Bean Leaves," Biochem. Biophys. Res. Comm. 23(5):683-690 (1966).

<3982>
CHEMICAL NAME: Pyrimidinedione, 6-methyl-2,4(1H,3H)-
PLANT: Crabgrass (DIGITARIA sp.); Sorghum (SORGHUM BICOLOR); Oat, wild (AVENA FATUA); Nutsedge (CYPERUS sp.); Mustard (BRASSICA sp.); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No adverse effect
COMMENTS: Substituted uracils are highly phytotoxic to wide variety of plants; compounds have low mammalian toxicity, and promise to become economically important herbicides
REFERENCE: Bucha, H.C., W.E. Cupery, J.E. Harrod, H.M. Loux, and L.M. Ellis, "Substituted Uracil Herbicides," Science 137:537-538 (1962).

<3983>
CHEMICAL NAME: Pyrimidinetrione, 2,4,6(1H,3H,5H)-
CHEMICAL COMMON NAME: Barbituric acid
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 0.001M
APPLICATION METHODS: Injection of 300ml fluid of test solution
EXPERIMENTAL CONDITIONS: Two 3-year old peach trees; injection holes drilled 30cm above soil line; trees injected while dormant, at bud swell stage, and at full leaf stage
EFFECTS: No injury
COMMENTS: 0.001M concentration dissolved in 0.1M dimethyl sulfoxide did not increase injury; effect on peach mosaic virus (strain PM-4) and necrotic ringspot virus also investigated
REFERENCE: Pine, T.S., "Reactions of Peach Trees and Peach Tree Viruses to Treatment with Dimethyl Sulfoxide and Other Chemicals," Phytopathology 57: 671-673 (1967).

<3984>
CHEMICAL NAME: Pyrimidinetrione, 2,4,6(1H,3H,5H)-
CHEMICAL COMMON NAME: Barbituric acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 3.2%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<3985>
CHEMICAL NAME: Pyrimidinone, 2,3-dihydro-2-thioxo-4(1H)-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 0.001M
APPLICATION METHODS: Injection of 300ml fluid of test solution
EXPERIMENTAL CONDITIONS: Two 3-year old peach trees; injection holes drilled 30cm above soil line; trees injected while dormant, at bud swell stage, and at full leaf stage
EFFECTS: Mild leaf burn with rapid recovery
COMMENTS: 0.001M concentration dissolved in 0.1M dimethyl sulfoxide did not increase injury; effect on peach mosaic virus (strain PM-4) and necrotic ringspot virus also investigated
REFERENCE: Pine, T.S., "Reactions of Peach Trees and Peach Tree Viruses to Treatment with Dimethyl Sulfoxide and Other Chemicals," Phytopathology 57: 671-673 (1967).

<3986>
CHEMICAL NAME: Pyrimidinone, 2,3-dihydro-2-thioxo-4(1H)-
CHEMICAL COMMON NAME: 2-TU
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 1x10(-3)M
APPLICATION METHODS: Solution soak of seed
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--21 to 23 C; light intensity--200 ft c; evaluation time--1, 3, and 5 da
EFFECTS: Reduced germination and seedling growth
COMMENTS: Germination of lettuce seeds inhibited by 2-thiouracil up to 24 hours; inhibition reversed by RNA precursors only; seedling growth of lettuce inhibited by 2-thiouracil and 5-fluorouracil; while effect of 2-thiouracil counteracted by RNA precursors, inhibition due to 5-fluorouracil not reversed significantly by any nucleic acid precursors
REFERENCE: Khan, A.A., "Inhibition of Lettuce Seed Germination and Seedling Growth by Antimetabolites of Nucleic Acids, and Reversal by Nucleic Acid Precursors and Gibberelic Acid," Planta (Berl.) 68:83-87 (1966).

<3987>
CHEMICAL NAME: Pyrimidinone, 2,3-dihydro-2-thioxo-4(1H)-
CHEMICAL COMMON NAME: 2-TU
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 5x10(-3)M
APPLICATION METHODS: Immersion in assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated bean seedling leaves; evaluation time--12 to 14 hr
EFFECTS: Inhibited protein synthesis and chloroplast formation

<3987>
<3987> CONT.
COMMENTS: Inhibitors affected RNA synthesis blocked 2nd stage and arrested proplastid conversion to chloroplasts; plastid division also seemed to stop; inhibition of DNA synthesis blocked 1st stage; proplastids, escaping the stage of division, directly converted to chloroplasts which are, similarly to those formed in the first case, incapable of division
REFERENCE: Beridze, T.G., M.S. Odintsova, N.A. Cherkashina, and M.M. Sissakian, "The Effect of Nucleic Acid Synthesis Inhibitors on the Chlorophyll Formation by Etiolated Bean Leaves," Biochem. Biophys. Res. Comm. 23(5):683-690 (1966).

<3988>
CHEMICAL NAME: Pyrimidinone, 2,3-dihydro-2-thioxo-4(1H)-
CHEMICAL COMMON NAME: 2-TU
PLANT: Hemp (CANNABIS SATIVA)
EXPERIMENTAL DOSE: 15 to 100 micro g/plant
APPLICATION METHODS: Painted solution on upper epidermis of youngest fully expanded leaves
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 C; light intensity--900 to 1000 ft c; photoperiod--18 hr
EFFECTS: Severely reduced hemp flowering response
COMMENTS: 2-thiouracil, partly annulled effect of photoperiodic induction in short-day plant, CANNABIS SATIVA when supplied at onset of dark period; treatment also produced aberrations in cellular differentiation in leaves
REFERENCE: Heslop-Harrison, J., "Suppressive Effects of 2-Thiouracil on Differentiation and Flowering in CANNABIS SATIVA," Sci. 132:1943-1944 (1960).

<3989>
CHEMICAL NAME: Pyrrol-2-one, 3-acetyl-1,5-dihydro-4-hydroxy-5-(methylpropyl)-
CHEMICAL COMMON NAME: Tenuazonic acid
PLANT: Stramonium (DATURA INNOXIA); Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 50 to 250 ppm
APPLICATION METHODS: Solution soak of seed; droplet applied to leaf
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination and leaf application
EFFECTS: At 50 and 100 ppm, reduced germination of growth of lettuce and DATURA with leaf necrosis of mature DATURA with 12 hr at 250 ppm
COMMENTS: Tenuazonic acid induced local necrosis on leaves of D. INNOXIA and inhibited root and shoot growth of germinating seeds; activity of toxin may be one of important factors responsible for poor germination of seeds produced by infected D. INNOXIA
REFERENCE: Janardhanan, K.K. and A. Husain, "Isolation of Tenuazonic Acid, a Phytotoxin, From ALTERNARIA ALTERNATA Causing Leaf Blight of DATURA INNOXIA Mill," Indian J. Exp. Biol. 13(3):321-322 (1975).

<3990>
CHEMICAL NAME: Pyrrolidine, 1-[1-oxo-2(3,4,5-tribromo-1H-pyrazol-1-yl)propyl]-
PLANT: Plants
EXPERIMENTAL DOSE: 14.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; spray assumed
EXPERIMENTAL CONDITIONS: Greenhouse study; data presented as average damage to 6 unspecified plants
EFFECTS: Moderate damage in preemergence application and no damage in postemergence
COMMENTS: Alkylation of substituted pyrazoles led to formation of N-pyrazolealkanoic acids which showed good herbicidal activity; conversion to corresponding amides produced striking differences in type and degree of activity in selectivity patterns; herbicidal activity related to degree of halogenation, oxidation state, and carbon chain length
REFERENCE: Chambers, E.E., G. Kornis, E. Nidy, and H.J. Vostral, "Alkylated Pyrazoles, A New Class of Herbicides," Herbicides, Fungicides, Formulation Chemistry, Vol. V (A.S. Tahori, Eds.) Gordon and Breach Sci. Pub., pp. 209-231 (1971).

<3991>
CHEMICAL NAME: Quaternary Ammonium compound ADB 52734-R
CHEMICAL COMMON NAME: Quaternary Cpd. ADB 52734-R
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<3992>
CHEMICAL NAME: Quinazoline, 3-ethyl-4-oxo-2-thion-1,2,3,4-tetrahydro-
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, 200, and 400 mg/l.
APPLICATION METHODS: Plants grown on agar medium containing test compound
EXPERIMENTAL CONDITIONS: One series of tests at all concentrations, then 2 experiments with 3 replications using 200 mg/l.; diuron used as a standard; root length expressed as percent of untreated control determined
EFFECTS: 93.05 and 67.45% root length of wheat and radish, respectively

<3992> CONT.
COMMENTS: 3.99 and 8.53% root length of wheat and radish, respectively due to diuron; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G.N., L.K. Iliev, and R.T. Vassileva, "Chemical Structure and Herbicidal Activity of Certain Esters of the m- and p- ethylthioureidobenzoic acids and of 3-Ethyl-4-oxo-2-thion-1,2,3,4-tetrahydro-quinazoline," C. R. Acad. Bulg. Sci. 22(9):1031-1034 (1969).

<3993>
CHEMICAL NAME: Quinoline
CHEMICAL COMMON NAME: Quinoline
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: No damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<3994>
CHEMICAL NAME: Quinolinium, n-alkylmethyliso-, chloride
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 5.0 and 10.0 ppmw
APPLICATION METHODS: Injected under surface of water by spray nozzle at 120 psi
EXPERIMENTAL CONDITIONS: Field study; naiads growing in 2 locations in FL; time period--1960 to 1962
EFFECTS: Moderate control of naiad at 10 ppmw for 4 wk
COMMENTS: Most promising of 13 herbicides for control of southern naiad were acrolein, endothall, diquat, and paraquat; acrolein and endothall gave most rapid kill of southern naiad but retreatment necessary at end of 16 weeks
REFERENCE: Blackburn, R.D. and L.W. Weldon, "Control of Southern Naiad in Florida Drainage and Irrigation Channels," Weeds 12(4):295-298 (1964).

<3995>
CHEMICAL NAME: Quinolinium, 1-(p-sec-amylbenzyl)-, chloride
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 43 and 4% cucumber root growth at 10 and 100 ppm, respectively; 61 and 12% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3996>
CHEMICAL NAME: Quinolinium, 1-(3,5,5-trimethylhexyl)-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 48 and 7% cucumber root growth at 10 and 100 ppm, respectively; 51 and 4% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3997>
CHEMICAL NAME: Quinolinium, 1-ethyl-4-[3-(3-ethyl-2(3H)-benzothiazolylidene)-1-propenyl]-
CHEMICAL COMMON NAME: Santobrite
PLANT: Hyacinth, water (EICHHORNIA HASTAEFOLIA)
EXPERIMENTAL DOSE: 5 to 80 ppm
APPLICATION METHODS: Addition to water containing test plants
EXPERIMENTAL CONDITIONS: Field study; plants and water contained in washtubs maintained outdoors
EFFECTS: Complete kill at 80 ppm and growth retardation at 36 ppm
COMMENTS: Dwarfing especially noted at low initial doses of santobrite, but specimens treated with low dosages of copper sulphate and beneclor seemed to thrive better than controls; initial dose of santobrite caused yellowing of stalks and withering of leaves; further applications damaged tissues and dwarfed new leaves
REFERENCE: Hirsch, A.A., "Toxic Effects of Sodium Pentachlorphenate and Other Chemicals on Water Hyacinth," Botan. Gaz. 103:620-621 (1942).

<3998>
<3998>
CHEMICAL NAME: Quinolinium, 2-(3,5,5,5-trimethylhexyl)-iso-, bromide
PLANT: Cucumber (CUCUMIS SATIVUS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes; 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 45 and 8% cucumber root growth at 10 and 100 ppm, respectively; 43 and 6% wheat root growth at 10 and 100 ppm, respectively
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Herbicidal Activity and Structure-Preliminary Evaluation of Some Quaternary Ammonium Salts as Phytotoxic Agents," Agric. Food Chem. 7(1):33-34 (1959).

<3999>
CHEMICAL NAME: Quinone, 2-amino-3-chloro-1,4-naphtho-
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 5.0 and 10.0 ppmw
APPLICATION METHODS: Injected under surface of water by spray nozzle at 120 psi
EXPERIMENTAL CONDITIONS: Field study; naiads growing in 2 locations in FL; time period--1960 to 1962
EFFECTS: Moderate control of naiad at 10 ppmw for 8 wk
COMMENTS: Most promising of 13 herbicides for control of southern naiad were acrolein, endothall, diquat, and paraquat; acrolein and endothall gave most rapid kill of southern naiad but retreatment necessary at end of 16 weeks
REFERENCE: Blackburn, R.D. and L.W. Weldon, "Control of Southern Naiad in Florida Drainage and Irrigation Channels," Weeds 12(4):295-298 (1964).

<4000>
CHEMICAL NAME: R 33222
CHEMICAL COMMON NAME: R-33222
PLANT: Grasses; Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Preemergence treatments 1 day after planting
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared the following April; single row plots, 3 by 26 ft; treatments randomized in each of 8 blocks; 15 ft of row from each plot harvested July 16; non-treated plot--43 plants harvested
EFFECTS: 2 lb/A--fair lambsquarter control on June 7, good grass and ragweed control and poor lambsquarter control on July 14; 4 lb/A--good lambsquarter control on June 7 but fair on July 14, complete ragweed and good grass control on July 14; beet harvest--53 plants at 2 lb/A and 18 plants at 4 lb/A
REFERENCE: Noll, C.J., "Weed Control in Beets with Herbicides," Proc. Northeast. Weed Sci. Soc. 31:244-246 (1977).

<4001>
CHEMICAL NAME: R-1856
CHEMICAL COMMON NAME: R-1856
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants; Pepper, pimento
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Undefined effect on crop plants or poor weed control (not given) or both; eliminated from further consideration for these crops
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<4002>
CHEMICAL NAME: R-25416
CHEMICAL COMMON NAME: R-25416
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effect control of shoot emergence at 10(-3) and 10(-4)M; moderate control at 10(-5) and 10(-6)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4003>
CHEMICAL NAME: R-25823
CHEMICAL COMMON NAME: R-25823
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA)
EXPERIMENTAL DOSE: 0.5-8.0 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha ; WP formulation
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days

<4003> CONT.
EFFECTS: Poor weed control or lack of crop tolerance, or both
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<4004>
CHEMICAL NAME: R-31401
CHEMICAL COMMON NAME: R-31401
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA)
EXPERIMENTAL DOSE: 0.5-8.0 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Neither satisfactory crop tolerance or weed control obtained in preplanting applications
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<4005>
CHEMICAL NAME: R-31401
CHEMICAL COMMON NAME: R-31401
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, large (DIGITARIA SANGUINALIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Preemergence spray in 40 gpa water
EXPERIMENTAL CONDITIONS: Randomized complete block design with 3 replications; 9 x 22 ft plot size; Paxton fine sandy loam; preemergence treatments made May 23, postemergence treatments on June 9; visual rating
EFFECTS: Moderate crabgrass control, good pigweed control; corn yield significantly greater than untreated check
REFERENCE: Dest, W.M., R.A. Peters, and M. Barrett, "The Control of Crabgrass and Redroot Pigweed in Silage Corn," Proc. Northeast. Weed Sci. Soc. 30:55-58 (1976).

<4006>
CHEMICAL NAME: R-31401
CHEMICAL COMMON NAME: R-31401
PLANT: Corn (ZEA MAYS); Nutsedge, yellow (CYPERUS ESCULENTUS); Foxtail, giant (SETARIA FABERI); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preplant incorporated (2-3 in.) and preemergence sprays; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Mattapex silt loam; time period--1974 and 1975
EFFECTS: At 2.0 lb/A, effective weed control with slight initial damage to corn but no adverse effect on yield
COMMENTS: Best control of weed species achieved with combination of materials; only RP-20630 and RP-15018, at high rates, caused corn injury and reduced yields
REFERENCE: Parochetti, J.V., G.W. Burt, and A.W. Bell, "Triazines, Acetanilides, and Several Other Herbicides for Weed Control in Corn," Proc. N.E. Weed Sci. Soc. 30:48-54 (1976).

<4007>
CHEMICAL NAME: Randox T
CHEMICAL COMMON NAME: CDAA-T
PLANT: Pigweed (AMARANTHUS sp.); Popolo (SOLANUM NIGRUM); Floras paintbrush (EMILIA SONCHIFOLIA); Richardia (RICHARDIA SCABRA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3.5, 4.0 and 4.7 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 3.1 % EC Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Moderate control of pigweed and richardia and no control of popolo and Floras paintbrush with good tolerance of corn
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<4008>
<4008>
CHEMICAL NAME: RH. A-40
CHEMICAL COMMON NAME: RH. A-40
PLANT: Orange, navel (BREVIPALPUS CALIFORNICUS)
EXPERIMENTAL DOSE: 200 g/100 l. water
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; principally evaluated mite control
EFFECTS: Leaf discoloration and skin blotching of fruit
COMMENTS: RH. A-40 effective in reducing citrus mite populations; caused severe phytotoxicity to trees, with very remarkable symptoms on fruit skin that reduced quality
REFERENCE: Hannah, M.A. and M.A. Abdelhafez, "On the Control of Citrus Mites: An Experimental Carbamate Fungicide Phytotoxic to Citrus Trees," Agric. Res. Rev. 53(1):187-190 (1975).

<4009>
CHEMICAL NAME: RH-5205
CHEMICAL COMMON NAME: RH-5205
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.13 and 0.25 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Effective control of pigweed and slight-moderate control of other weeds with slight adverse effect on corn
COMMENTS: Penoxalin in combination with atrazine improved control of velvetleaf; control of lambsquarters and pigweed only slightly better than either herbicide applied alone; penoxalin in combination with cyanazine greatly improved control of lambsquarters, velvetleaf, and panicum with no appreciable increase in control of pigweed
REFERENCE: Ilnicki, R.D. and R.W. Michieka, "Penoxalin Alone and in Combination with Atrazine, Cyanazine, and RH-5205 for Weed Control in Corn," Proc. Northeast. Weed Sci. Soc. 31:6-10 (1977).

<4010>
CHEMICAL NAME: Rifamycin
CHEMICAL COMMON NAME: Rifamycin
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 7 micro g
APPLICATION METHODS: Immersion of wheat coleoptiles for up to 120 hr
EXPERIMENTAL CONDITIONS: Laboratory study; coleoptiles of different ages (up to 120 hr) studied
EFFECTS: Inhibited template activity (and therefore RNA synthesis) of wheat chromatin
COMMENTS: RNA synthesis occurs on template of chromatin isolated from wheat shoots and was inhibited by actinomycin D, RNase, and rifamycin; IAA and GA appear to have different effects on changes of template activity of chromatin in cells of different ages
REFERENCE: Likholat, T.V. and V.A. Pospelov, "The Influence of B-Indoleacetic Acid and Gibberellin on the Template Activity of the Chromatin of Wheat Coleoptiles of Different Ages," FEBS Letters 40(1):77-79 (1974).

<4011>
CHEMICAL NAME: RP-20630
CHEMICAL COMMON NAME: RP-20630
PLANT: Corn (ZEA MAYS); Nutsedge, yellow (CYPERUS ESCULENTUS); Foxtail, giant (SETARIA FABERI); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 0.38, 0.75, and 1.50 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Mattapex silt loam; time period--1974 and 1975
EFFECTS: At 0.75 lb/A, moderate to effective control of weed with slight corn damage but no adverse effect on yield
COMMENTS: Best control of weed species achieved with combination of materials; only RP-20630 and RP-15018, at high rates, caused corn injury and reduced yields
REFERENCE: Parochetti, J.V., G.W. Burt, and A.W. Bell, "Triazines, Acetanilides, and Several Other Herbicides for Weed Control in Corn," Proc. N.E. Weed Sci. Soc. 30:48-54 (1976).

<4012>
CHEMICAL NAME: S-6044
CHEMICAL COMMON NAME: S-6044
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Tomato (LYCOPERSICON ESCULENTUM); Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Stinkgrass (ERAGROSTIS CILIANENSIS)
EXPERIMENTAL DOSE: 1.0, 2.0 and 3.0 lb/A
APPLICATION METHODS: Preemergence application; 34 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Norfolk loamy sand; evaluation time--one and three months; seven types of application schedules employed selectively
EFFECTS: Excellent weed control with no adverse effect on tomatoes
COMMENTS: Of a number of herbicides and herbicide combinations evaluated, S-6044 (undisclosed chemistry) applied as preemergence herbicide appeared most promising (excellent weed control without tomato injury)
REFERENCE: Beste, C.E., "Weed Control in Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 28:265-269 (1974).

<4013>
CHEMICAL NAME: S-6044
CHEMICAL COMMON NAME: S-6044
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA)
EXPERIMENTAL DOSE: 0.5-8.0 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Neither satisfactory crop tolerance or weed control obtained in preplanting applications
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<4014>
CHEMICAL NAME: S-6044
CHEMICAL COMMON NAME: S-6044
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 3.36 and 4.48 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: In transplant applications, effective control of broadleaf weeds and grass with no tomato phytotoxicity
COMMENTS: Metribuzin, napropamide, and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<4015>
CHEMICAL NAME: S-6044
CHEMICAL COMMON NAME: S-6044
PLANT: Broadleaf weeds; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.5, 3.0, and 6.00 lb/A
APPLICATION METHODS: Preplant and preemergence sprays; 80 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Effective control of broadleafs and quackgrass at all rates but slight to moderate control of barnyard grass with no adverse effect on potato yield
COMMENTS: Most herbicides somewhat ineffective for annual grass control; S-6044, M&B20035, and oxadiazolin all ineffective for control of annual grasses; combinations of oryzalin with metribuzin, methazole, and linuron also provided good broadleaved weed and quackgrass control; oryzalin alone not effective for annual grass or quackgrass control
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in White Potatoes in Maine - 1973," Proc. Northeast. Weed Sci. Soc. 28:287-295 (1974).

<4016>
CHEMICAL NAME: Sarcosinate, sodium lauroyl
CHEMICAL COMMON NAME: Sarcosyl NL
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: No survival of PHALAENOPSIS at 1000 ppm and reduced survival at 100 ppm; no growth of EPIDENDRUM at 100 and 1000 ppm
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<4017>
CHEMICAL NAME: Sarcosine, N-(2-hydroxytetradecyl)-, sodium salt
CHEMICAL COMMON NAME: Sodium N-(2-hydroxytetradecyl) sarcosinate
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: At 1000 ppm reduced survival of PHALAENOPSIS and reduced growth of EPIDENDRUM
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of

<4017>
<4017> CONT.
surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<4018>
CHEMICAL NAME: Scharlach red
CHEMICAL COMMON NAME: Scharlach red
PLANT: Kalanchoe (KALANCHOE DIAGREMONTIANA); (BRYOPHYLLUM CALYCINUM); (NICOTINIA GLAUCA); Sunflower (HELIANTHUS ANNUUS); Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.0% and 3.0% ether solution
APPLICATION METHODS: Solution applied to decapitated plants or to injured (needle prick) stem soft tissue
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Varied cancerous growths induced in plants with carcinogenic agents or growth substances
COMMENTS: Scharlach red found active in some cases with KALANCHOE DAIGREMONTIANA; application to apical internode after decapitation produced overgrowths whichresembled crown galls; other carcinogens like 1,2,5,6-dibenzanthracene,3,4-benzpyrene, methylcholanthrene induced necrosis of treated zone; indoleacetic acid in lanolin on decapitated and injured stems induced root formation; stems cracked and small nodular masses formed; small overgrowths on decapitated kalanchoes present histological pictures identical with crown gall
REFERENCE: Levine, M., "Plant Responses to Carcinogenic Agents and Growth Substances: Their Relation to Crown Gall and Cancer," Bull. Torrey Bot. Club 67:199-226 (1940).

<4019>
CHEMICAL NAME: Shell oil 130
CHEMICAL COMMON NAME: Shell oil 130
PLANT: Spinach (SPINACIA OLERACEA); Plants
EXPERIMENTAL DOSE: 5, 10, and 15 gal/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; single and double spinach seeding rates and normal and delayed times
EFFECTS: At 10 and 15 gal/A rates (delayed seeding), effective weed control and no adverse effect on spinach yield
COMMENTS: No chemical increased yield of spinach; two chemicals in normal seeding plots and 5 chemicals in delayed seeding plots gave as good yield as untreated and significant increase in weed control
REFERENCE: Noll, C.J. and M.L. Odland, "Pre-Emergence Weeding of Spinach With Chemical Herbicides," Proc. N.E. Weed Cont. Conf. 5:115-117 (1951).

<4020>
CHEMICAL NAME: Shell oil 130
CHEMICAL COMMON NAME: Shell 130
PLANT: Plants; Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 5 and 10 gal/A
APPLICATION METHODS: Preemergence spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight to moderate weed control at 5.0 gal/A with no adverse efect on lima bean and stand reduction of direct-seeded but not transplanted cauliflower
COMMENTS: Premerge, Dow General and K-1131-Na, and all dinitros, gave excellent control of weeds with no bean crop injury for two months
REFERENCE: Jacob, W.C., "Pre-Emergence Weed Control in Lima Beans and Cauliflower," Proc. N.E. Weed Cont. conf. 5:1-5 (1951).

<4021>
CHEMICAL NAME: Silane, (bromomethyl)dimethoxymethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: Preemergence--moderate millet injury at 2.24 g/m(2) and serious millet injury at 5.6 g/m(2), moderate radish injury, and serious bean injury; postemergence--no corn injury, moderate tomato injury, minor to moderate millet injury, and bean killed
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4022>
CHEMICAL NAME: Silane, (chloromethyl)diethoxymethyl-
PLANT: Soybean (GLYCINE MAX); Beet, sugar (BETA VULGARIS); Cotton (GOSSYPIUM HIRSUTUM); Sudan grass (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE); Crabgrass (DIGITARIA sp.); Fescue, meadow (FESTUCA ELATIOR); Oat, wild (AVENA FATUA); Johnson grass (SORGHUM HALEPENSE); Pigweed (AMARANTHUS sp.); Bean, pinto (PHASEOLUS VULGARIS); Marigold (TAGETES MINUTA); Cucumber (CUCUMIS SATIVUS); Millet, German (SETARIA ITALICA); Crabgrass, large (DIGITARIA SANGUINALIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.11, 0.22, 0.56, 1.12, and 2.24 g/m(2); 2000, 5000, and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatments to soil and postemergence treatments to healthy foliage; pigweed, pinto bean, marigold, cucumber, German millet, large crabgrass, and corn, treated only

<4022> CONT.
postemergent, other plants treated both
EFFECTS: Preemergence--soybeans, beets, and cotton killed at all rates, other plants seriously injured or killed at 1.12 and 2.24 g/m(2); postemergence-- Japanese millet, wild oats, radish, corn, sudan grass, and meadow fescue moderately injured at 10,000 ppm, pigweed and pinto bean seriously injured or killed at all 3 rates, marigold, cucumber, and large crabgrass seriously injured or killed at 5000 and 10,000 ppm, German millet seriously injured at 10,000 ppm and moderately injured at 5000 ppm
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4023>
CHEMICAL NAME: Silane, (chloromethyl)difluoromethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: Preemergence--all plants killed; postemergence--minor corn injury, moderate tomato injury, serious bean injury, and millet killed
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4024>
CHEMICAL NAME: Silane, (chloromethyl)dimethoxymethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: Preemergence--serious injury to radish (5.6 g/m(2)), other plants killed at both rates; postemergence--moderate corn injury and tomato killed at 4000 ppm, moderate millet injury and bean killed at 10,000 ppm
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4025>
CHEMICAL NAME: Silane, (chloromethyl)ethoxydimethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effects
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4026>
CHEMICAL NAME: Silane, (chloromethyl)methyl-di(1-methylethoxy)-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: Preemergence--serious radish injury to radish and millet (2.24 g/m(2)), millet (5.6 g/m(2)) and bean killed; postemergence--no corn injury, serious tomato injury, moderate millet injury, and bean killed
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4027>
CHEMICAL NAME: Silane, (chloropropyl)ethoxydimethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effect
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.4 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4028>
<4028>
CHEMICAL NAME: Silane, (chloropropyl)trimethoxy-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effect
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.4 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4029>
CHEMICAL NAME: Silane, (dichloromethyl)dichloromethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effects
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4030>
CHEMICAL NAME: Silane, (dichloromethyl)dimethoxymethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effects
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4031>
CHEMICAL NAME: Silane, (dichloromethyl)methoxydimethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effects
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4032>
CHEMICAL NAME: Silane, (dichloromethyl)trimethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effects
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4033>
CHEMICAL NAME: Silane, (trichloromethyl)dimethoxymethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: Preemergence--serious millet injury, moderate radish injury, and bean killed; postemergence--no corn or tomato injury, minor millet injury, and serious bean injury
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4034>
CHEMICAL NAME: Silane, (1-chloroethyl)dimethoxymethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: Preemergence--serious millet injury at 2.24 g/m(2) and millet killed at 5.6 g/m (2), moderate radish and serious bean injury; postemergence--no corn injury, minor to moderate tomato injury, moderate millet injury, and serious bean injury
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4035>
CHEMICAL NAME: Silane, (1,2-dichloroethyl)dimethoxymethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effects
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4036>
CHEMICAL NAME: Silane, (1,2-dichloroethyl)trimethoxy-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effects
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4037>
CHEMICAL NAME: Silane, (2-chloroethyl)dimethoxymethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effects
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4038>
CHEMICAL NAME: Silane, (2,3-dichloropropyl)trimethoxy-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effect
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.4 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4039>
CHEMICAL NAME: Silane, dichloro(chloromethyl)methyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: Preemergence--serious millet injury at both rates, moderate radish injury and bean killed; postemergence--no corn injury, moderate tomato and millet injury, and bean killed
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4040>
<4040>
CHEMICAL NAME: Silane, dichlorodimethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effect
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4041>
CHEMICAL NAME: Silane, diethoxy(iodomethyl)methyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: Preemergence--millet killed at 5.6 g/m(2) and seriously injured at 2.24 g/m(2), moderate radish injury, and bean killed; postemergence--no corn injury, minor tomato injury, minor to moderate millet injury, and moderate bean injury
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4042>
CHEMICAL NAME: Silane, dimethoxy(methoxymethyl)methyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effect
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.24g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4043>
CHEMICAL NAME: Silane, trichloromethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effect
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.4 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4044>
CHEMICAL NAME: Silane, trimethoxymethyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effect
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.4 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4045>
CHEMICAL NAME: Silane, trimethoxypropyl-
PLANT: Millet, Japanese (ECHINOCHLOA FRUMENTACEA); Radish (RAPHANUS SATIVUS); Bean; Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.6 and 2.24 g/m(2); 4000 and 10,000 ppm
APPLICATION METHODS: Preemergence (g/m(2)) and postemergence spray (ppm)
EXPERIMENTAL CONDITIONS: Preemergence treatment to millet, radish, and beans; postemergence treatment to corn, tomato, millet, and beans
EFFECTS: No effect
COMMENTS: Radish and millet exposed to 5.6 g/m(2) preemergence; millet and beans exposed to 2.4 g/m(2) preemergence and to 10,000 ppm postemergence; corn and tomato exposed to 4000 ppm postemergence
REFERENCE: Leasure, J.K. and J.L. Speier, "Some Herbicidal Silicon Compounds," J. Med. Chem. 9:949-952 (1966).

<4046>
CHEMICAL NAME: SN 40624
CHEMICAL COMMON NAME: SN-40624
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Broadleaf weeds; Grasses; Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 1 and 2 kg/ha
APPLICATION METHODS: Preemergence spray; 80% WP formulation
EXPERIMENTAL CONDITIONS: Field studies; randomized block design with 4 replications
EFFECTS: Unacceptable weed control; no indication of cane injury
REFERENCE: Iggo, G.A., "Results of Screening Pre-emergence Herbicides for Sugarcane," Proc. S. Afr. Sugar Technol. Assoc. 49:122-125(1975).

<4047>
CHEMICAL NAME: Sodium azide
CHEMICAL COMMON NAME: Sodium azide
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2) M, 10(-3) M, and 10(-4) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-2) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4048>
CHEMICAL NAME: Sodium azide
CHEMICAL COMMON NAME: Sodium azide
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat, and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in sorghum, oat, and cucumber at 1 ppm, 50% or greater at 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<4049>
CHEMICAL NAME: Sodium azide
CHEMICAL COMMON NAME: Sodium azide
PLANT: Radish (RAPHANUS SATIVUS); Pea, sweet (PISUM SATIVUM); Sorghum (SORGHUM BICOLOR); Bermudagrass, common (CYNODON DACTYLON); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 5, 10, 20, and 40 ppm
APPLICATION METHODS: Formulation--15% G; incorporated treatments
EXPERIMENTAL CONDITIONS: Plastic pots with 500 g treated soil (Lufkin fine sandy loam) at pH 5.5 or 8.0; seeds planted with exception of bermuda grass (stolons planted); moisture maintained at 80% field capacity; plant counts taken 1 wk after treatment for seeds and 2 wk after for bermuda grass
EFFECTS: 10 ppm or higher showed significant decrease in number of shoots per pot, plant height and dry weight per pot; after 1 additional week, no significant new growth in peas, sorghum, and corn but radish test showed high level of regrowth during second week--most evident at 10 to 20 ppm treatments
COMMENTS: Alkaline soil did not prevent phytotoxicity; apparently after sodium azide dissipated from soil, radish seeds began normal development
REFERENCE: Ketchersid, M.L. and M.G. Merkle, "Dissipation and Phytotoxicity of sodium Azide in Soil," Weed Sci. 24(3):312-315 (1976).

<4050>
<4050>
CHEMICAL NAME: Sodium cyanide
CHEMICAL COMMON NAME: Sodium cyanide
PLANT: Plaintain, broadleaf (PLANTAGO MAJOR); Dandelion (TARAXACUM OFFICINALE); Crabgrass (DIGITARIA sp.); Foxtail (SETARIA sp.); Quackgrass (AGROPYRON REPENS); Bindweed, hedge (CONVOLVULUS SEPIUM); Bindweed, field (CONVOLVULUS ARVENSIS); Poison ivy (RHUS RADICANS); Honeysuckle (LONICERA sp.); Privet (LIGUSTRUM JAPONICUM); Gardenia (GARDENIA JASMINOIDES)
EXPERIMENTAL DOSE: 0.5 to 9.0%
APPLICATION METHODS: Sprinkled on leaves, poured into holes, or poured onto soil surface; one to three applications
EXPERIMENTAL CONDITIONS: Field study; grasses mowed before application
EFFECTS: At 3.0%, quackgrass, bindweed, poison ivy, and honeysuckle killed; all other plants killed at 2.0
COMMENTS: Sodium cyanide used successfully in cradication of dandelion and plantain; successful whether applied in solid form to crowns of plnats, in solution sprinkled on leaves, poured on soil around plants, or into holes adjacent to them; sodium cyanide killed crab grass and foxtail grass, but single applications did not prevent reappearance of quack grass; three applications of solutions required to prevent reappearing of plants from July until close of the growing season; one application of ammonium sulfamate killed quack grass
REFERENCE: McCool, M.M., "Use of Sodium Cyanide for the Eradication of Undesirable Plants," Cont. Boyce Thompson Inst. 13:473-477 (1943-1945).

<4051>
CHEMICAL NAME: Sodium fluoride
CHEMICAL COMMON NAME: Sodium fluoride
PLANT: Maple, red (ACER RUBRUM); Pine, loblolly (PINUS TAEDA)
EXPERIMENTAL DOSE: 2X10(-2)M to 2X10(-4)M
APPLICATION METHODS: Soil addition
EXPERIMENTAL CONDITIONS: Environmental chamber (phytotron); soils--Georgeville silt loam and Whitestore sandy loam; temperatures--11 C to 29 C; photoperiod--16 hr
EFFECTS: Reduced growth of and leaf injury to both species at 2X10(-2)M
COMMENTS: Sodium fluoride or lead chloride reduced growth of loblolly pine and red maple seedlings in pots of two forest soils; lead chloride treatments also increased anthocyanin content of red maple leaves
REFERENCE: Davis, J.B. and R.L. Barnes, "Effects of Soil-Applied Fluoride and Lead on Growth of Loblolly Pine and Red Maple," Environ. Pollut. 5(1):35-44 (1973).

<4052>
CHEMICAL NAME: Sodium fluoride
CHEMICAL COMMON NAME: Sodium fluoride
PLANT: Maple, red (ACER RUBRUM); Pine, loblolly (PINUS TAEDA)
EXPERIMENTAL DOSE: 2X10(-4)M--2X10(-2)M
APPLICATION METHODS: Soil drench application; 2 X weekly
EXPERIMENTAL CONDITIONS: Soils--Georgeville silt loam and Whitestore sandy loam; environmental chamber (phytotron) exposure; 16 hr photoperiod with supplemental light as needed; also greenhouse study; two sets of day/night temperatures; pot culture
EFFECTS: Fluoride--leaf necrosis of pine and leaf blotching in maple; lead--pine needle growth reduction (finally necrosis at higher concentrations) and leaf casting and increased red pigmentation in maple leaves; growth reductions of both types of seedlings
COMMENTS: Seedlings grew better on Whitestore sandy loam than on Georgeville silt loam; there was little difference between soil types in influencing responses to fluoride or lead
REFERENCE: Davis, J.B. and R.L. Barnes, "Effects of Soil-Applied Fluoride and Lead on Growth of Loblolly Pine and Red Maple," Environ. Pollut. 5(1):35-44 (1973).

<4053>
CHEMICAL NAME: Sodium fluoride
CHEMICAL COMMON NAME: NaF
PLANT: Pine, white (PINUS STROBUS); Pine, loblolly (PINUS TAEDA); Pine, short-leaf (PINUS ECHINATA); Maple, red (ACER RUBRUM); Sycamore, American (PLANTANUS OCCIDENTALIS); Poplar, yellow (LIRIODENDRON TULIPIFERA); Gum, red (LIQUIDAMBAR STYRACIFLUA); Dogwood, flowering (CORNUS FLORIDA); Sourwood (OXYDENDRUM ARBOREUM)
EXPERIMENTAL DOSE: 1 X 10(-4) to 1 X 10(-2)M
APPLICATION METHODS: Soaking branches and leaves collected in field
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--25 C; 24 hr soak of branch ends and leaf petioles followed by CO(2) uptake analysis
EFFECTS: Apparent reduced photosynthesis and increased dark respiration translatable to growth reduction; pines significantly affected at 1 X 10(-3)M and most hardwoods at 1 X 10(-2)M
COMMENTS: Three pine and six hardwood species revealed consistent effects of added fluoride on gas exchange processes of detached pine needles and hardwood leaves; apparent photosynthesis commonly depressed when foliage allowed to take up NaF solutions; dark respiration commonly stimulated at low levels of NaF and higher levels either stimulated the process further (in most hardwoods) or inhibited it (in the pines and some hardwoods)
REFERENCE: McLaughlin, S. B. and R. L. Barns, "Effects of Flouride on Photosynthesis and Respiration of Some South-East American Forest Trees," Environ. Pollut. 8(2): 91-96 (1975).

<4054>
CHEMICAL NAME: Solubor
CHEMICAL COMMON NAME: Solubor
PLANT: Broadleaf weeds; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 28 kg/ha
APPLICATION METHODS: Pre-plant incorporated, preemergence, or postemergence sprays; 280 l./ha at 2 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1972 and 1973
EFFECTS: Moderate weed control with no adverse effect on beet
COMMENTS: Broadleaf weed control achieved in table beets with cycloate, CNP, pebulate, lenacil, pyrazon, IMC

<4054> CONT.
3950, TCA + pyrazon, and pebulate followed by pyrazone; fair weed control achieved with EPTC, propachlor, and solubor; poor weed control obtained from CDEC, chlorpropham, pyrazon, and TCA; yields expressed as $/ha or tons/ha reduced by chlorpropham, lenacil, CNP, and TCA
REFERENCE: Phatak, S.C. and D.J. Cantliffe, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Table Beets," Hortsci. 10(3):271-273 (1975).

<4055>
CHEMICAL NAME: Sorbitan, mono-9-octadecenoate, poly(oxy-1,2-ethanediyl) derivs., (Z)-
CHEMICAL COMMON NAME: Tween 80
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: No adverse effect
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<4056>
CHEMICAL NAME: Sorbitan, monododecanoate, poly(oxy-1,2-ethanediyl) derivs.
CHEMICAL COMMON NAME: Tween 20
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: No adverse effect
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<4057>
CHEMICAL NAME: Sorbitan, monohexadecanoate, poly(oxy-1,2-ethanediyl) derivs.
CHEMICAL COMMON NAME: Tween 40
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: No adverse effect
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<4058>
CHEMICAL NAME: Sorbitan, monooctadecanoate, poly(oxy-1,2-ethanediyl) derivs.
CHEMICAL COMMON NAME: Tween 60
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: No adverse effect
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<4059>
CHEMICAL NAME: Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',4',5',7'-tetrabromo-3',6'-dihydroxy-, disodium salt
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 0.001M
APPLICATION METHODS: Injection of 300ml fluid of test solution
EXPERIMENTAL CONDITIONS: Two 3-year old peach trees; injection holes drilled 30cm above soil line; trees injected while dormant, at bud swell stage, and at full leaf stage
EFFECTS: Medium amount of leaf burn and some terminal dieback, partial recovery during year of treatment
COMMENTS: 0.001M concentration dissolved in 0.1M dimethyl sulfoxide did not increase injury; effect on peach mosaic virus (strain PM-4) and necrotic ringspot virus also investigated
REFERENCE: Pine, T.S., "Reactions of Peach Trees and Peach Tree Viruses to Treatment with Dimethyl Sulfoxide and Other Chemicals," Phytopathology 57: 671-673 (1967).

<4060>
<4060>
CHEMICAL NAME: Spirosol-4en-3-one
CHEMICAL COMMON NAME: Delta(4)-solasoden-3-one
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Reduced growth of wheat with undefined effects in pea test
COMMENTS: Of 524 compounds examined, 71 were found highly active and a further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<4061>
CHEMICAL NAME: Stannane, tricyclohexylhydroxy-
CHEMICAL COMMON NAME: Cyhexatin
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.25 aihg
APPLICATION METHODS: 3 applications, 7 days apart with hand sprayer; 50% WP formulation
EXPERIMENTAL CONDITIONS: Cultivars--'snow ridge', 'yellow Delaware', 'torch', 'Delaware', 'snow pink', 'hostess', 'nob hill', yellow Bonnie Jean', and 'orange bowl'; initial application June 13
EFFECTS: Severe injury to 'snow pink' and 'nob hill' flowers; moderate flower injury to 'orange bowl' and 'yellow Bonnie Jean'; minor flower injury to yellow Delaware' and 'hostess'; other culfivars not tested; no foliage injury to any plants
COMMENTS: Trade name, Plictran--miticide
REFERENCE: Poe, S.L., "Evaluations of Pesticides for Phytotoxicity on Chrysanthemum Flowers," Proc. Fl. State Hortic. Soc. 83:469-471 (1970).

<4062>
CHEMICAL NAME: Stannane, tricyclohexylhydroxy-
CHEMICAL COMMON NAME: Cyhexatin
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 6 oz/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to schefflera, palm, and gardenia
COMMENTS: 50% WP formulation; trade name Plictran; rated unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<4063>
CHEMICAL NAME: Stannane, tricyclohexylhydroxy-
CHEMICAL COMMON NAME: Plictran
PLANT: Cascara (RHAMNUS PURSHIANA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Florida beauty (DRACENA GODSEFFIANA); Holly, burford (ILLEX CORNUTA); Juniper (JUNIPERUS CHINENSIS); Privet (LIGUSTRUM JAPONICUM); Prayer plant (MARANTA LEUCONEURA); Red nerve plant (MARANTA RUBRANEURAL); Fluffy ruffle (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Podocarpus (PODOCARPUS MAKI); Golden pothos (SCINDAPSUS AUREUS); Nephritis (SYNGONIUM PODOPHYLLUM)
EXPERIMENTAL DOSE: 0.20 and 0.40 lb/A; 50% WP; sticker-spreader (Plyac)
APPLICATION METHODS: Postemergence spray to run-off; 3X applications at weekly intervals
EXPERIMENTAL CONDITIONS: Greenhouse study; temperatures--80 to 85 F (day) and 62 to 68 F (night); RH--60 to 95%; evaluation time--1 wk
EFFECTS: Severe injury of schefflera and peperomia and slight to moderate damage generally at 2X (0.4 lb/A) application rate of fluffy ruffle, cordatum, podocarpus, nephthytis, and golden pothos; no injury of remaining plants
COMMENTS: Almost one-half plants exhibited some phytotoxic response; most sensitive plants were schefflera, fluffy ruffle fern, peperomia, and golden pothos; most toxic chemicals were plictran and omite and least phytotoxic materials were zectran and pirimor
REFERENCE: Short, D.E. and D.B. McConnell, "Pesticide Phytotoxicity to Ornamental Plants," Proc. Fla. St. Hort. Soc. 86:439-442 (1974).

<4064>
CHEMICAL NAME: Stannane, tricyclohexylhydroxy-
CHEMICAL COMMON NAME: Cyhexatin
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 6 oz/100 gal--based upon concentration of formulation per 100 gal water
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning

<4064> CONT.
between 7:30-10:30
EFFECTS: Foliage injury to schefflera, palm and gardenia
COMMENTS: 50% WP formulation; trade name Plictran; rated unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<4065>
CHEMICAL NAME: Stannane, tricyclohexylhydroxy-
CHEMICAL COMMON NAME: Dithane M-45
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Little or no adverse effect on germination or seedlings but some chromosome fragmentation
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA which found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<4066>
CHEMICAL NAME: Starch
CHEMICAL COMMON NAME: Starch
PLANT: Lychee (LITCHI CHINENSIS)
EXPERIMENTAL DOSE: 1:100, 1:200, and 1:400
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No adverse effect
COMMENTS: Lychee leaves susceptible to ionic and nonionic surfactants; injury due to wetting agents ranged from complete necrosis of leaves to chlorosis and mottling and premature leaf fall
REFERENCE: Nakata, S. and Y. Tanada, "Phytotoxicity of Wetting Agents on Lychee," J. Econ. Ent. 54(6):1074-1076 (1961).

<4067>
CHEMICAL NAME: Stigmast-5-en-3-ol
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 to 10 micro g/plant; 0.05% Tween 20 and ethanol
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Stimulated growth at 0.1 to 1.0 micro g/plant
COMMENTS: Estrone, 17-beta-estradiol, and beta-sitosterol increased growth of pea; treatment with cholesterol and testosterone resulted in no observable stimulation of growth
REFERENCE: Kopcewicz, J., "Influence of Steroids on the Growth of the Dwarf Pea," Kurze Originalmitteilungen 56(5):287 (1969).

<4068>
CHEMICAL NAME: Stoddard solvent
CHEMICAL COMMON NAME: Stoddard solvent
PLANT: Pine, Monterey (PINUS RADIATA)
EXPERIMENTAL DOSE: 50 gal/A
APPLICATION METHODS: Addition to soil in which pine seedlings were grown
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Morphological changes in roots and mycorrhizae
COMMENTS: Internal alterations of mycorrhizae under influence of eradicants characterized by irregularities in shape of fungal mantle, restricted penetration of mycelia, and reduced development of Hartig net; external modifications of short roots suggested that biocides cause radical changes in exudates of rhizospheric organisms
REFERENCE: Wilde, S.A. and D.J. Persidsky, "Effect of Biocides on the Development of Ectotrophic Mycorrhizae in Monterey Pine Seedlings," Proc. Soil Sci. Soc. 20:107-110 (1956).

<4069>
CHEMICAL NAME: Stoddard solvent
CHEMICAL COMMON NAME: Stoddard solvent
PLANT: Spinach (SPINACIA OLERACEA); Plants
EXPERIMENTAL DOSE: 100 gal/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; single and double spinach seeding rates and normal and delayed times
EFFECTS: Moderate weed control (delayed seeding) with no adverse effect on spinach yield
COMMENTS: No chemical increased yield of spinach; two chemicals in normal seeding plots and 5 chemicals in delayed seeding plots gave as good yield as untreated and significant increase in weed control
REFERENCE: Noll, C.J. and M.L. Odland, "Pre-Emergence Weeding of Spinach With Chemical Herbicides," Proc. N.E. Weed Cont. Conf. 5:115-117 (1951).

<4070>
<4070>
CHEMICAL NAME: Streptamine, 0-2-deoxy-2-(methylamino)-alpha-L-glucopyranosyl-(1-2)-0-5-deoxy-3-C-formyl-alph a-L-lyxofuranosyl-(1-4)-N,N'-bis(aminoiminomethyl)-D-
CHEMICAL COMMON NAME: Streptomycin
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.5%
APPLICATION METHODS: Foliar spray daily for 12 days
EXPERIMENTAL CONDITIONS: Laboratory study; chloroplasts harvested from green and chlorotic leaves, homogenized, isolated, and purified; temperature--2C; electrophoresis
EFFECTS: Inhibited chlorophyll-complex synthesis
COMMENTS: Chloramphenicol, streptomycin, and oxytetracyclin inhibited synthesis of two chlorophyll-protein complexes and two other proteins; uncertain whether absent or weak bands of complexes result of inhibited protein synthesis or result of deficient chlorophyll
REFERENCE: Machold, O., "Lamellar Proteins of Green and Chlorotic Chloroplasts as Affected by Iron Deficiency and Antibiotics," Biochim. Biophys. Acta 238:324-331 (1971).

<4071>
CHEMICAL NAME: Streptamine, 0-2-deoxy-2-(methylamino)-alpha-L-glucopyranosyl-(1-2)-0-5-deoxy-3-C-formyl-alph a-L-lyxofuranosyl-(1-4)-N,N'-bis(aminoiminomethyl)-D-
CHEMICAL COMMON NAME: Streptomycin
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: No adverse effect
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<4072>
CHEMICAL NAME: Sulfamic acid, monoammonium salt
CHEMICAL COMMON NAME: Ammonium sulfamate
PLANT: Radish (RAPHANUS SATIVUS); Ryegrass, perennial (LOLIUM PERENNE); Bentgrass, black (AGROSTIS GIGANTEA); Plants; Redtop (AGROSTIS ALBA); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 2.0, 4.0, and 6.0 lb/1000 sq ft
APPLICATION METHODS: Added to soil
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: At 6.0 lb/1000 sq ft, effective weed control with delayed germination of radish, ryegrass, and redtop
COMMENTS: Several fertilizers and chemicals inhibited weed growth either by killing seeds or by killing seedlings shortly after germination; materials applied dry or as spray solutions and thoroughly mixed by cultivation or raking into upper 2 or 3 inches of soil; period of time after treatment before grass, radishes, alfalfa, or seedlings of tomato, cabbage, or other crops could be planted safely varied with different materials and amounts applied; sterilizing soils with fertilizers or chemicals appears very practical method of controlling weeds and fertilizing seedbeds in one operation; especially true of fertilizers which do not appreciably alter soil complex and which do not leave residual toxicity for long periods
REFERENCE: DeFrance, J.A., R.S. Bell, and T.E. Odland, "Killing Weed Seeds in the Grass Seedbed by the Use of Fertilizers and Chemicals," J. Am. Soc. Agron. 39:530-535 (1947).

<4073>
CHEMICAL NAME: Sulfamic acid, monoammonium salt
CHEMICAL COMMON NAME: Ammonium sulfamate
PLANT: Quackgrass (AGROPYRON REPENS); Crabgrass (DIGITARIA sp.); Foxtail (SETARIA sp.); Poison ivy (RHUS RADICANS)
EXPERIMENTAL DOSE: 1.0 to 8.0%
APPLICATION METHODS: Sprinkled on foliage
EXPERIMENTAL CONDITIONS: Field study; grasses mowed before application
EFFECTS: Crabgrass, foxtail, and poison ivy killed at 2.0% and quackgrass at 3.0%
COMMENTS: Sodium cyanide used successfully in eradication of dandelion and plantain; successful whether applied in solid form to crowns of plnats, in solution sprinkled on leaves, poured on soil around plants, or into holes adjacent to them; sodium cyanide killed crab grass and foxtail grass, but single applications did not prevent reappearance of quack grass; three applications of solutions required to prevent reappearing of plants from July until close of the growing season; one application of ammonium sulfamate killed quack grass
REFERENCE: McCool, M.M., "Use of Sodium Cyanide for the Eradication of Undesirable Plants," Cont. Boyce Thompson Inst. 13:473-477 (1943-1945).

<4074>
CHEMICAL NAME: Sulfamic acid, monoammonium salt
CHEMICAL COMMON NAME: AMS
PLANT: Couchgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2) M, 10(-3) M, and 10(-4) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days

<4074> CONT.
EFFECTS: Complete control of shoot emergence at 10(-2)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4075>
CHEMICAL NAME: Sulfamic acid, monoammonium salt
CHEMICAL COMMON NAME: Ammonium sulfamate
PLANT: Plants
EXPERIMENTAL DOSE: 2475 lb/A
APPLICATION METHODS: Postemergence spray; two applications
EXPERIMENTAL CONDITIONS: Field study, road cracks and road right-of-way
EFFECTS: No adverse effect noted
COMMENTS: Initial postpaving treatment made with beginning of growth in spring; TCA applied at rate of 24 lb/ft-mile, and subsequent applications made as need; treatment interval about 30 days
REFERENCE: McCully, W. G., W. J. Bowmer, and A. F. Wiese, "Control of Grasses and Weeds Growing in Asphalt Pavements," PANS 16(3):497-504 (1970).

<4076>
CHEMICAL NAME: Sulfamic acid, monoammonium salt
CHEMICAL COMMON NAME: Ureabor
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sowthistle, perennial (SONCHUS ARVENSIS)
EXPERIMENTAL DOSE: 7.5 lb/sq rd
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; combinations of herbicide treatments, seasonal application, cultivation, and cropping investigated over 3 yr period (1955-1957)
EFFECTS: Effective thistle control with 3-plus years residual effect
COMMENTS: Canada thistle and perennial sowthistle reacted to 2,4-D and MCPA; ester and amine forms of 2,4-D equally effective for sowthistle, while both and MCPA equal for Canada thistle; both herbicides prevent seed production, kill susceptible plants and weaken resistant plants
REFERENCE: Derscheid, L.A., R.L. Nash, and G.A. Wicks, "Thistle Control With Cultivation, Cropping and Chemicals," Weeds 9(1):90-102 (1961).

<4077>
CHEMICAL NAME: Sulfamic acid, monoammonium salt
CHEMICAL COMMON NAME: AMS
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sowthistle, perennial (SONCHUS ARVENSIS)
EXPERIMENTAL DOSE: 4.0 to 6.0 lb/sq rd
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; combinations of herbicide treatments, seasonal application, cultivation, and cropping investigated over 3 yr period (1955-1957)
EFFECTS: Effective thistle control with 2 to 3 years residual effect
COMMENTS: Canada thistle and perennial sowthistle reacted to 2,4-D and MCPA; ester and amine forms of 2,4-D equally effective for sowthistle, while both and MCPA equal for Canada thistle; both herbicides prevent seed production, kill susceptible plants and weaken resistant plants
REFERENCE: Derscheid, L.A., R.L. Nash, and G.A. Wicks, "Thistle Control With Cultivation, Cropping and Chemicals," Weeds 9(1):90-102 (1961).

<4078>
CHEMICAL NAME: Sulfamic acid, monoammonium salt
CHEMICAL COMMON NAME: AMS
PLANT: Aster, blue wood (ASTER CORDIFOLIUS); Bindweed, field (CONVOLVULUS ARVENSIS); Bindweed, hedge (CONVOLVULUS SEPIUM); Carrot, wild (DAUCUS CAROTA); Chickweed, common (STELLARIA MEDIA); Chickweed, mouse-ear (CERASTIUM VULGATUM); Clover (TRIFOLIUM sp.); Copperleaf, Virginia (ACALYPHA VIRGINICA); Daisy, oxeye (CHRYSANTHEMUM LEUCANTHEMUM); Dandelion (TARAXACUM OFFICINALE); Dock, broad-leaf (RUMEX OBTUSIFOLIUS); Dogbane, hemp (APOCYANUM CANNABINUM); Fleabane, annual (ERIGERON ANNUS); Horsenettle (SOLANUM CAROLINENSE); Ironweed (VERONICA ALTISSIMA); Poison ivy (RHUS RADICANS); Ladysthumb (POLYGONUM PERSICARIA); Onion, wild (ALLIUM sp.); Plantain, broad-leaf (PLANTAGO MAJOR); Plantain, buckhorn (PLANTAGO LANCEOLATA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Sorrell, red (RUMEX ACETOSELLA); Spanish needles (BIPENS BIPINNATA); Vetch, common (VICIA SATIVA); Violet (VIOLA sp.); Sorrell, wood (OXALIS STRICTA); Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 4.48 and 22.4 kg/ha; ester and amine
APPLICATION METHODS: Postemergence spray; 1870 l/ha (low rate) and 9350 l/ha (high rate); applied to ground cover and soil beneath apple trees
EXPERIMENTAL CONDITIONS: Field study; annual applications over 6 yr period (1957 throug 1962)
EFFECTS: Generally slight to effective control of broadleaf weeds and no control of grass weeds with slight chlorosis of apple leaves
COMMENTS: Single applications 2,4,5-T ester, 2,4,5-T amine, and silvex to ground cover and soil under apple trees significantly reduced proportion of broadleaf plants to grasses; after six annual applications, ground cover consisted of almost pure stands of grasses; six applications of dinoseb + oil decreased proportion of broadleaf weeds to grasses; one application did not change proportion; one and six annual applications of dinoseb amine significantly reduced broadleaf weeds
REFERENCE: Schubert, O.E., "Plant Cover Changes Following Herbicide Applications in Orchards," Weed Sci. 20(1):124-127 (1972).

<4079>
<4079>
CHEMICAL NAME: Sulfamic acid, monoammonium salt
CHEMICAL COMMON NAME: Ammonium sulfamate
PLANT: Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 0.5 to 2.0 M (0.5 to 2.0 l./sq m)
APPLICATION METHODS: Sprinkle application
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At 0.6 to 1.0 l. rates, kill of bermudagrass
COMMENTS: CNS or ammonium sulfamate controlled Bermuda grass effectively if applied at ratio of 0.6 to 1 liter per square meter in dry season; CNS at ratio of 1 liter per square meter eradicated crowfoot grass only if the grass previously cut
REFERENCE: Fromm, F. and I.M. Vidal, "The Chemical Control of Bermuda Grass and of Crowfoot Grass," Science 99(2580):478 (1944).

<4080>
CHEMICAL NAME: Sulfate complex, copper
CHEMICAL COMMON NAME: TBCS
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 4.0 lb/100 gal; 75-150 gal/A
APPLICATION METHODS: Postemergence spray; weekly application
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Marketable fruit yield reduced
COMMENTS: Chlorothalonil, cyclic anhydrosulfides and disulfides, zinc ion + maneb, and zinc ion + maneb + s-triazine gave excellent control of late blight; same treatments plus several zinc ion + maneb + copper combinations controlled leafmold
REFERENCE: Jones, J.P., "Evaluation of Some Fungicide Treatments for Phytotoxicity to Tomato and Control of Late Blight and Leafmold," Plant Dis. Rep. 57(7):612-614 (1973).

<4081>
CHEMICAL NAME: Sulfide, ethyl o-nitrophenyl
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4082>
CHEMICAL NAME: Sulfilimine, N-[[4-(dipropylamino)-3,5-dinitrophenyl]sulfonyl]-S,S-dimethyl-
CHEMICAL COMMON NAME: Prosulfalin
PLANT: Crabgrass (DIGITARIA ISCHAEMUM); Bluegrass, Kentucky (POA PRATENSIS); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 2.80 and 3.36 kg/ha; 50% WS
APPLICATION METHODS: Preemergence spray (40 psi and 50 gal/A) and granule broadcast
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; evaluation time--up to 5 mo
EFFECTS: Effective crabgrass control at both rates with slight to no damage of turfgrasses
COMMENTS: Best control of crabgrass in both turf species obtained by DCPA, butralin, AC-92390, and prosulfalin; all rates of granular HOE-22870 provided good crabgrass control in red fescue; in bluegrass, HOE-22870 controlled crabgrass only at the high rate or when the low rate was reapplied
REFERENCE: Watschke, T.L., D.J. Wehner, and J.M. Duich, "Pre- and Postemergence Crabgrass Control in Turf," Proc. NE Weed Sci. Soc. 30:358-366 (1976).

<4083>
CHEMICAL NAME: Sulfilimine, N-[[4-(dipropylamino)-3,5-dinitrophenyl]sulfonyl]-S,S-dimethyl-
CHEMICAL COMMON NAME: Prosulfalin
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, creeping red (FESTUCA RUBRA); Crabgrass (DIGITARIA ISCHAEMUM); Goosegrass (ELEUSINE INDICA)
EXPERIMENTAL DOSE: 1.5, 2.0, 2.5, 3.0, and 4.0 lb/A
APPLICATION METHODS: Preemergence spray at 86 gpa rate using CO(2) sprayer
EXPERIMENTAL CONDITIONS: Test 1--crabgrass control test on turf grasses, 4 x 5 ft plots, 3 replications, ratings on August 22, herbicides applied May 1; test 2--goosegrass control study in bluegrass, May 20 treatment and September 23 ratings, 5 x 5 plots, 6 replications
EFFECTS: Test 1--80% crabgrass control at 1.5 lb/A and 97% control at 4 lb/A, minor turfgrass injury; test 2--76% goosegrass control at 2.5 lb/A
COMMENTS: Fescue, bentgrass, and bluegrass tabulated as turfgrass in test 1
REFERENCE: Coville, C.M. and J.A. Jagschitz, "Herbicides for Preemergence Crabgrass and Goosegrass Control in Turfgrass--1975," Proc. Northeast. Weed Sci. Soc. 30:367-371 (1976).

<4084>
CHEMICAL NAME: Sulfonate, alpha-olefin-
CHEMICAL COMMON NAME: Alpha olefin sulfonate
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: No survival of PHALAENOPSIS at 1000 ppm and reduced survival at 100 ppm; no growth of EPIDENDRUM at 1000 ppm
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<4085>
CHEMICAL NAME: Sulfone, chloromethyl trifluoromethyl
CHEMICAL COMMON NAME: Endothall, mono-N,N-dimethylcocoamine salt
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 1.0 to 5.0 ppmw
APPLICATION METHODS: Injected under surface of water by spray nozzle at 120 psi
EXPERIMENTAL CONDITIONS: Field study; naiads growing in 2 locations in FL; time period--1960 to 1962
EFFECTS: Effective naid control at all rates for up to 8 wk
COMMENTS: Most promising of 13 herbicides for control of southern naiad were acrolein, endothall, diquat, and paraquat; acrolein and endothall gave most rapid kill of southern naiad but retreatment necessary at end of 16 weeks
REFERENCE: Blackburn, R.D. and L.W. Weldon, "Control of Southern Naiad in Florida Drainage and Irrigation Channels," Weeds 12(4):295-298 (1964).

<4086>
CHEMICAL NAME: Sulfone, chloromethyl trifluoromethyl
CHEMICAL COMMON NAME: Sumithion
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 3.4x10(-4) M
APPLICATION METHODS: Added to fresh tissue homogenate prepared from plants at 5-leaf stage
EXPERIMENTAL CONDITIONS: Laboratory study; enzyme study
EFFECTS: Inhibition of propanil-hydrolyzing enzyme
COMMENTS: Hydrolysis of rice plants inhibited by insecticides; inhibitory activity of organophosphate such as paraoxon IN VIVO and IN VITRO significantly stronger than that of organothiophosphate such as parathion; injury to rice plants by insecticides sprayed on them with propanil seems to be caused by inhibition of propanil detoxifying enzyme
REFERENCE: Matsunaka, S., "Propanil Hydrolysis: Inhibition in Rice Plants by Insecticides," Sci. 160:1360-1361 (1968).

<4087>
CHEMICAL NAME: Sulfone, diphenyl
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 93 and 59% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<4088>
CHEMICAL NAME: Sulfone, diphenyl
CHEMICAL COMMON NAME: Diphenyl sulphone
PLANT: Currant, black (RIBES NIGRUM)
EXPERIMENTAL DOSE: 0.2% solution
APPLICATION METHODS: Sprayed to run-off
EXPERIMENTAL CONDITIONS: 5 year old black currant bushes; once a year application at grape-stage; 3 season study; 3 replicates for each variety
EFFECTS: No injury
REFERENCE: Kirby, A.H.M. and M. Bennett, "Phytotoxicity Trials with Acaricides on Black Currant and Plum," Rep. E. Malling Res. Sta. 152-154 (1958).

<4089>
<4089>
CHEMICAL NAME: Sulfone, divinyl
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 7 and 2% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<4090>
CHEMICAL NAME: Sulfone, methylvinyl
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 88 and 3% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<4091>
CHEMICAL NAME: Sulfone, octylvinyl
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 102 and 12% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<4092>
CHEMICAL NAME: Sulfoxime, L-methionine-dl-
PLANT: Pea, sweet (PISUM SATIVUM); Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 5, 10, 25, and 50 uM
APPLICATION METHODS: Injections into leaves
EXPERIMENTAL CONDITIONS: Investigation of effect on pea glutamine synthetase; tobacco plants--1/2 of leaf injected with test compound in water, other half injected with test compound in 200mM L-glutamine, plants incubated in growth chamber for 4 days (28 C, 12 hr day length at 2600 ft-candles), dry weights, chlorophyll, and ammonia contents determined
EFFECTS: Transferase activity of glutamine synthetase inhibited--preincubation with test compound increased inhibition, inhibition reduced if L-glutamine included in preincubation mixture; tobacco leaf--half leaves treated with test compound in water were chlorotic after 48 hr, other half not chlorotic, test compound increased ammonia content, but significantly decreased chlorophyll and wet and dry weights, L-glutamine injections prevented or markedly reduced these effects
COMMENTS: Mode of action of tobacco wildfire toxin produced from bacterium PSEUDOMONAS TABACI also investigated
REFERENCE: Sinden, S.L. and R.D. Durbin, "Glutamine Synthetase Inhibition: Possible Mode of Action of Wildfire Toxin from PSEUDOMONAS TABACI," Nature 219:379-380 (1968).

<4093>
CHEMICAL NAME: Sulfur
CHEMICAL COMMON NAME: Cosan
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: No adverse effect
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<4094>
CHEMICAL NAME: Sulfur dioxide
CHEMICAL COMMON NAME: SO(2)
PLANT: Cottonwood, eastern (POPULUS DELTOIDES);Pine, red (PINUS RESINOSA);Pine, Austrian (PINUS NIGRA);Spruce, Colorado (PICEA PUNGENS)
EXPERIMENTAL DOSE: 0.2 - 10.0 ppm
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Laboratory study; pollen germination on nutrient medium after fumigation exposure;

<4094> CONT.
;incubation period--4 and 48 hr; temperature-24-26 C
EFFECTS: Reduced pollen germination and germination tube elongation; pollen of P. DELTOIDES was most sensitive
COMMENTS: Moist P. DELTOIDES pollen germination significantly reduced at SO(2) concentrations of 0.75 ppm and above; POPULUS DELTOIDES pollen tube elongation decreased linearly with increases in SO(2) concentration; frequent bursting of pollen tubes occurred at SO(2) concentrations greater than or equal to 0.3 ppm for 4 hours
REFERENCE: Karnosky, D.F. and G.R. Stairs, "The Effects of SO(2) on IN VITRO Forest Tree Pollen Germination and Tube Elongation," J. Env. Qual. 3(4):406-409(1974).

<4095>
CHEMICAL NAME: Sulfur dioxide
CHEMICAL COMMON NAME: SO(2)
PLANT: Oat (AVENA SATIVA); Radish (RAPHANUS SATIVUS); Swiss chard (BETA VULGARIS); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.75-1.00 ppm
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Environmental chamber; wind velocity--1.4 to 1.6 m/sec(-1), light intensity--45 to 50,000 lux, temperature--21 to 27 C, and RH--50 to 60%; time--3 days; pot culture of plants in soil: sand: peat (3:1:1) mix; charcoal filters controlled ambient pollution; 1-and 3-hr exposures
EFFECTS: Leaf damage; radish most sensitive
COMMENTS: Threshold for SO(2) injury to leaves was 0.75 ppm for about 1 hr; NO(2) caused no injury; in combination, phytotoxicity apparently enhanced by these toxicants but relatively high doses required to cause injury symptoms; at lower concentrations, no injury noted on oat, radish, tomato, and pinto bean lants
REFERENCE: Bennett, J.H., A.C. Hill, A. Soleimani, and W.H. Edwards, "Acute Effects of Combination of Sulfur Dioxide and Nitrogen Oxide on Plants," Environ. Pollut. 9(2):127-132 (1975).

<4096>
CHEMICAL NAME: Sulfur dioxide
CHEMICAL COMMON NAME: SO(2)
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5-6.0 ppm
APPLICATION METHODS: 30 min exposures of field grown soybeans
EXPERIMENTAL CONDITIONS: Field studies; exposure accomplished by means of plastic-covered cabinets (6'x6'x4.5'); 485 plots; evaluation time--7 to 10 days after exposure; applied at varied stages of plant growth
EFFECTS: Approximate 10% reduction in soybean yield correlated with about 30% destruction of leaves; no stage-of-growth effects found
COMMENTS: No loss in yield occurred without visible leaf injury
REFERENCE: Davis, C.R., "Sulfur Dioxide Fumigation of Soybeans: Effect on Yield," Air Pollut. Control Assoc. 22(12):964-966 (1972).

<4097>
CHEMICAL NAME: Sulfur dioxide
CHEMICAL COMMON NAME: SO(2)
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 0.03-0.50 ppm
APPLICATION METHODS: SO(2) polluted air scrubbed or used as is and passed over rye plants
EXPERIMENTAL CONDITIONS: Greenhouse study; unheated; located in locality of domestic chimneys venting gases from coal or coke combustion; 98-100% of SO(2) removed by scrubbing; unfertile pasture soil at pH 4.5; half plots fertilized with improved pH; half plots not fertilized
EFFECTS: Ryegrass weighted 16 to 57 % less in SO(2)-contaminated air than in scrubbed air; no abnormal leaf lesions observed; positive effects (increased weight, more leaves, and more tillers) observed in ryegrass when exposed to SO(2) for part of day or night (12 hr periods); leaf senescence accelerated by SO(2); scrubbing air essentially equivalent to adding fertilizer
COMMENTS: Concluded that coal-smoke can reduce growth of ryegrass without producing lesions; mechanism postulated was that SO(2) affected balance of partially oxidized and reduced sulfur radicals important in controlling cell division
REFERENCE: Bleasdale, J.K.A., "Effects of Coal-Smoke Pollution Gases on the Growth of Ryegrass (LOLIUM PERENNE L.)," Environ. Pollut. 5:275-285 (1973).

<4098>
CHEMICAL NAME: Sulfur dioxide
CHEMICAL COMMON NAME: SO(2)
PLANT: Lily (LILIUM LONGIFLORUM)
EXPERIMENTAL DOSE: 0.40, 0.71, and 2.50 ppm
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Fumigation chamber; incubation at 28 C
EFFECTS: Total loss of pollen viability at all concentrations after 5 hr exposure; reduced pollen tube length at other concentrations/exposures
COMMENTS: Marked inhibition of tube elongation occurred with two combinations of two gases and moderate inhibition occurred with three combinations of two gases; major atmospheric pollutants such as SO(2), NO(2), and O(3) may enhance each other's phytotoxicity; aldehydes may be synergistic in their effects on plants
REFERENCE: Masaru, N., F. Syozo, and K. Saburo, "Effects of Exposure to Various Injurious Gases on Germination of Lily Pollen," Environ. Pollut. 11(3):181-187 (1976).

<4099>
<4099>
CHEMICAL NAME: Sulfur dioxide
CHEMICAL COMMON NAME: SO(2)
PLANT: Bean, snap (PHASEOLUS VULGARIS); Barley (HORDEUM VULGARE); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.059 to 0.338 ppm
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--24 C; RH--70%; light intensity--25.4 Klux; photoperiod--16 hr; evaluation time--24 hr to 27 da
EFFECTS: Severe injury at 0.06-0.08 ppm (14 day exposure) to corn and barley leaves with no injury to bean leaves
COMMENTS: When high concentrations of SO(2) used, severe injury occurred on corn and barley leaves; the combination of SO(2) and HF did not alter foliar symptom production; beans not injured by any of the treatments; with lower concentrations of SO(2), foliar response of barley and corn accentuated by combination SO(2) and HF
REFERENCE: Mandl, R.H., L.H. Weinstein, and M. Keveny, "Effects of Hydrogen Fluoride and Sulfur Dioxide Alone and in Combination on Several Species of Plants," Environ. Pollut. 9(2):133-143 (1975).

<4100>
CHEMICAL NAME: Sulfur dioxide
CHEMICAL COMMON NAME: SO(2)
PLANT: (BUELLIA PUNCTATA); (HYPOGYMNIA PHYSODES); (PHYSCIA DUBIA); (PARMELIA SULCATA); (XANTHERIA PARIENTINA); (PHYSCIA ORBICULARIS); (PHYSCIA ADSCENDENS); (PHYSCIA GRISEA); (LECANORA SUBFUSCA); (LECANORA CARPINIA); (PHYSCIA PULVERULENTA); (ANAPTYCHIA CILIARIS)
EXPERIMENTAL DOSE: 10-110 microgram/m(3)
APPLICATION METHODS: Ambient SO(2) levels (air pollution)
EXPERIMENTAL CONDITIONS: Field study; sampling of lichens from ACER, FRAXINUS, ULMUS, and TILIA trees with 25 km of center of city; tree bark also sampled for pH and buffering capacity determinations
EFFECTS: Lichen distribution patterns correlated with SO(2) concentrations
COMMENTS: SO(2) air pollution during two consecutive winters mapped; SO(2) isopleths coincide well with inner distribution limits of lichens, indicating specific critical SO(2) levels for different species
REFERENCE: Johnsen, I. and Sochting, U., "Influence of Air Pollution on the Epiphytic Lichen Vegetation and Bark Properties of Deciduous Trees in the Copenhagen Area," Oikos 24(3):344-351 (1973).

<4101>
CHEMICAL NAME: Sulfur dioxide
CHEMICAL COMMON NAME: SO(2)
PLANT: Poplar hybrid (POPULUS DELTOIDES X POPULUS TRICHOCARPA)
EXPERIMENTAL DOSE: 5 ppm
APPLICATION METHODS: Fumigation for 3,6,9, or 12 hr
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; temperatures--20 C (night) and 30 C (day); evaluation time--daily for 3 da and up to 2 wk
EFFECTS: Leaf necrosis and reduced growth
COMMENTS: Fumigation with SO(2) resulted in responses significantly different among clones of same hybrid poplar parentage; variation expressed not only for severity of foliar necrosis, but also for shoot growth depression
REFERENCE: Dochinger, L.S., A.M. Townsend, D.W. Seegrist, and F.W. Bender, "Responses of Hybrid Poplar Trees to Sulfur Dioxide Fumigation," J. Air Poll. Cont. 22(1):369-371 (1972).

<4102>
CHEMICAL NAME: Sulfur dioxide
CHEMICAL COMMON NAME: SO(2)
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 0.4, 0.6, and 2.5 ppm
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--20 to 25 Ci RH--60 to 70%
EFFECTS: Reduced shoot growth and leaf necrosis with increased leaf abscission at 2.5 ppm
COMMENTS: Apple trees relatively sensitive to SO(2) and insensitive to O(3); interaction of SO(2) and O(3) resulted in synergistic effect especially on shoot growth reduction (and in a synergistic effect especially on shoot growth reduction) and in producing greyish-green, water-soaked areas on mid-shoot leaves
REFERENCE: Kender, W.J. and F.H.F.G. Spierings, "Effects of Sulfur Dioxide, Ozone, and Their Interactions on Golden Delicious Applies," Neth. J. Pl. Path. 81:149-150 (1975).

<4103>
CHEMICAL NAME: Sulfuric acid
CHEMICAL COMMON NAME: Sulfuric acid
PLANT: Charlock, yellow (BRASSICA ARVENSIS); Charlock, white (RAPHANUS RAPHANISTRUM); Pennycress, field (THLASPI ARVENSE); Mustard, treacle (ERYSIMUM CHEIRANTHOIDES); Goosefoot (ATRIPLEX PATULA); Lamb's-quarters (CHENOPODIUM ALBUM); Mayweed, scentless (MATRICARIA INODORA); Cornflower (CENTUREA CYANUS); Chamomile, wild (MATRICARIA CHAMOMILLA); Knotweed (POLYGONUM AVICULARE); Buckwheat, wild (POLYGONUM CONVOLVULUS); Venus comb (SCANDSIZ PECTEN-VENERIS); Poppy, field (PAPAVER RHOEAS); Fumitory, common (FUMARIA OFFICINALIS); Parsley-piert (ALCHEMILLA MICROCORPA); Spurrey, corn (SPERGULA ARVENSIS); Hempnettle (GALEOPSIS TETRAHIT); Speedwell, ivy-leaf (VERONICA HEDERIFOLIA); Barley (HORDEUM VULGARE); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 9.0 to 18.0%
APPLICATION METHODS: Foliar spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective control of charlock, pennycress, mustard, goosefoot, lambsquarters, bearbind, parsley piert, spurrey, nettle, and speedwell with less effective control of remaining weeds and no adverse effect on barley and wheat
COMMENTS: Copper chloride at higher concentrations and sulphuric acid gave small increases in yield;

<4103> CONT.
4-chloro-2-methyl-phenoxyacetic acid--no adverse effect on spring and autumn-sown cereals but at higher concentrations may cause reduction in yield of spring oats and barley, less selective in action and more likely to injure crop
REFERENCE: Blackman, G.E., "A Comparison of Certain Plant-Growth Substances With Other Selective Herbicides," Nature 155(3939):500-501 (1945).

<4104>
CHEMICAL NAME: Sulfuric acid, cadmium salt
CHEMICAL COMMON NAME: Cadmium sulfate
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 0.007, 0.09, and 0.83 mg/l.
APPLICATION METHODS: Addition of cadmium sulfate solutions to achieve desired concentrations in nutrient solutions
EXPERIMENTAL CONDITIONS: Laboratory study; artificial oxygenation; solution renewal every 48 hr; 9 hr photoperiod; 200 ft-candles; 2 wk acclimation; temperature--24.4 to 25.8 C; DO-6.2 mg/l.; pH-7.7; evaluation time--11 and 21 day
EFFECTS: Reduced chlorophyll content; reduced turgor; reduced stolon development; bioaccumulation; all effects concentration dependent
COMMENTS: Common aquatic plants capable of introducing potentially toxic quantities of cadmium into food chain of higher organisms
REFERENCE: Cearley, J.E. and R.L. Coleman, "Cadmium Toxicity and Accumulation in Southern Naiad," Bull. Environ. Contam. Toxicol. 9(1):100-101 (1973).

<4105>
CHEMICAL NAME: Sulfuric acid, cadmium salt
CHEMICAL COMMON NAME: Cadmium sulfate
PLANT: Lettuce (LACTUCA SATIVA); Cress (LEPIDIUM SATIVUM)
EXPERIMENTAL DOSE: 100 ppm
APPLICATION METHODS: Postemergence spray and soil application
EXPERIMENTAL CONDITIONS: Environmental chamber study; soil--terralite and peatmoss mix; pot culture, one plant/pot; temperature, day/night-24/17 C; light intensity--20 Klx; photoperiod--16 hr; RH--60-80%; pretreatment with metal salt solutions, then fumigation exposure to ozone (30-35 pphm); evaluatiom time, one wk
EFFECTS: None
COMMENTS: Pretreatment of plants with cadmium or zinc had profound effect on extent of ozone injury
REFERENCE: Czuba, M. and D.P. Ormond, "Effects of Cadmium and Zinc on Ozone-Induced Phytotoxicity," Can. J. Bot. 52:645-649 (1974).

<4106>
CHEMICAL NAME: Sulfuric acid, copper (2+) salt
CHEMICAL COMMON NAME: Copper sulfate
PLANT: Duckweed (LEMNA VALDIVIANA); Fern, floating (SALVINIA NATANS)
EXPERIMENTAL DOSE: 0.001 to 1.000 ppm
APPLICATION METHODS: Addition to culture solution in which plants were growing
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--22 to 26 Ci light intensity--500 ft candles; photoperiod--16 hr; evaluation time--up to 21 da; 0.2% Arnon and Hoagland's culture solution
EFFECTS: Reduced growth at 0.1 to 0.5 ppm, death at 1.0 ppm, and bioaccumulation in both species
COMMENTS: Significant concentration effect for metals analysed comparing water concentrations with plant levels; high levels of manganese and iron occurred in plants; only for these two metals was a significant correlation found between water and plant concentrations when compared on an individual basis; lead and cadmium also showed a quite good fit
REFERENCE: Hutchinson, T.C. and H. Czyrska, "Heavy Metal Toxicity and Synergism to Floating Aquatic Weeds," Verh. Internat. Verein. Limnol. 19:2102-2111 (1975).

<4107>
CHEMICAL NAME: Sulfuric acid, diammonium salt
CHEMICAL COMMON NAME: Ammonium sulfate
PLANT: Radish (RAPHANUS SATIVUS); Ryegrass, perennial (LOLIUM PERENNE); Bentgrass, black (AGROSTIS GIGANTEA); Plants
EXPERIMENTAL DOSE: 100 lb/1000 sq ft
APPLICATION METHODS: Added to soil
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: Effective weed control with reduced germination of radish and ryegrass
COMMENTS: Several fertilizers and chemicals inhibited weed growth either by killing seeds or by killing seedlings shortly after germination; materials applied dry or as spray solutions and thoroughly mixed by cultivation or raking into upper 2 or 3 inches of soil; period of time after treatment before grass, radishes, alfalfa, or seedlings of tomato, cabbage, or other crops could be planted safely varied with different materials and amounts applied; sterilizing soils with fertilizers or chemicals appears very practical method of controlling weeds and fertilizing seedbeds in one operation; especially true of fertilizers which do not appreciably alter soil complex and which do not leave residual toxicity for long periods
REFERENCE: DeFrance, J.A., R.S. Bell, and T.E. Odland, "Killing Weed Seeds in the Grass Seedbed by the Use of Fertilizers and Chemicals," J. Am. Soc. Agron. 39:530-535 (1947).

<4108>
<4108>
CHEMICAL NAME: Sulfuric acid, diethyl ester
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.2 M
APPLICATION METHODS: 100 seeds placed in test solution for 2 hr
EXPERIMENTAL CONDITIONS: Trisomic barley seeds (trisomics 4 and 5); seeds pre-soaked in distilled water before treatment; seeds washed in tap water after treatment, chilled for one week, then germinated on blotters
EFFECTS: Trisomic 4--48% survival (control, 95.3%), 28.6% fertility (control, 61.4%); Trisomic 5--35% seed survival (control, 93.1%), 35.9% fertility (control, 63.5%)
COMMENTS: Trisomic barley has extra chromosome, control was disomic
REFERENCE: Sayed, H.I., S.B. Helgason, and E.N. Larter, "Effect of Gamma Rays and Some Chemical Mutagens on Induction of Telotrisomics in Hordeum," Can. J. Genet. Cytol. 15:815-824 (1973).

<4109>
CHEMICAL NAME: Sulfuric acid, monodecyl ester, sodium salt
CHEMICAL COMMON NAME: Sodium laurel sulfate
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<4110>
CHEMICAL NAME: Sulfuric acid, monododecyl ester sodium salt
CHEMICAL COMMON NAME: Sodium lauryl sulfate
PLANT: Lychee (LITCHI CHINENSIS)
EXPERIMENTAL DOSE: 1:500
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Leaf necrosis
COMMENTS: Lychee leaves susceptible to ionic and nonionic surfactants; injury due to wetting agents ranged from complete necrosis of leaves to chlorosis and mottling and premature leaf fall
REFERENCE: Nakata, S. and Y. Tanada, "Phytotoxicity of Wetting Agents on Lychee," J. Econ. Ent. 54(6):1074-1076 (1961).

<4111>
CHEMICAL NAME: Sulfuric acid, zinc salt (1:1)
CHEMICAL COMMON NAME: Zinc Sulfate
PLANT: Lettuce (LACTUCA SATIVA); Cress (LEPIDIUM SATIVUM)
EXPERIMENTAL DOSE: 100 ppm
APPLICATION METHODS: Postemergence spray and soil application
EXPERIMENTAL CONDITIONS: Environmental chamber study; soil--terralite and peatmoss mix; pot culture, one plant/pot; temperature, day/night-24/17 C; light intensity--20 Klx; photoperiod--16 hr; RH--60-80%; pretreatment with metal salt solutions, then fumigation exposure to ozone (30-35 pphm); evaluatiom time, one wk
EFFECTS: None
COMMENTS: Pretreatment of plants with cadmium or zinc had profound effect on extent of ozone injury
REFERENCE: Czuba, M. and D.P. Ormond, "Effects of Cadmium and Zinc on Ozone-Induced Phytotoxicity," Can. J. Bot. 52:645-649 (1974).

<4112>
CHEMICAL NAME: Sulfuric acid, 2,4-dichlorophenoxyethyl ester, calcium salt
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Postemergence spray, 4 applications starting with asparagus ground-break, 25 or 40 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control with no adverse effect on asparagus
COMMENTS: When sprayed on asparagus planting before, during, and after cutting season, controlled weeds effectively without affecting quality or yield of spears; in plantings of sweet and field corn, best control of weeds obtained when germination of weeds occurred over period of several days
REFERENCE: Finn, T.P. and L.J. King, "Weed Control Studies With Experimental Herbicide 1 at Seabrook Farms, Bridgeton, N.J." Proc. N.E. Weed Cont. 5:Conf. 81-86 (1951).

<4113>
CHEMICAL NAME: Sulfuric acid, 2,4-dichlorophenoxyethyl ester, sodium salt
CHEMICAL COMMON NAME: Sodium 2,4-dichlorophenoxyethyl sulfate
PLANT: Plants; Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At 1.5 lb/A, moderate weed control with no adverse effect on lima bean
COMMENTS: Premerge, Dow General and K-1131-Na, and all dinitros, gave excellent control of weeds with no bean crop injury for two months
REFERENCE: Jacob, W.C., "Pre-Emergence Weed Control in Lima Beans and Cauliflower," Proc. N.E. Weed Cont. conf. 5:1-5 (1951).

<4114>
CHEMICAL NAME: Sulfuric acid, 2,4-dichlorophenoxyethyl ester, sodium salt
CHEMICAL COMMON NAME: Sodium 2,4-dichlorophenoxyethyl sulfate
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Postemergence spray, 4 applications starting with asparagus ground-break, 25 or 40 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control with no adverse effect on asparagus and corn
COMMENTS: When sprayed on asparagus planting before, during, and after cutting season, controlled weeds effectively without affecting quality or yield of spears; in plantings of sweet and field corn, best control of weeds obtained when germination of weeds occurred over period of several days
REFERENCE: Finn, T.P. and L.J. King, "Weed Control Studies With Experimental Herbicide 1 at Seabrook Farms, Bridgeton, N.J." Proc. N.E. Weed Cont. 5:Conf. 81-86 (1951).

<4115>
CHEMICAL NAME: Sulfurous acid, 2-[4-(1,1-dimethylethyl)cyclohexyl]2-propynyl ester
CHEMICAL COMMON NAME: Omite
PLANT: Cascara (RHAMNUS PURSHIANA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Florida beauty (DRACENA GODSEFFIANA); Holly, burford (ILLEX CORNUTA); Juniper (JUNIPERUS CHINENSIS); Privet (LIGUSTRUM JAPONICUM); Prayer plant (MARANTA LEUCONEURA); Red nerve plant (MARANTA RUBRANEURAL); Fluffy ruffle (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Podocarpus (PODOCARPUS MAKI); Golden pothos (SCINDAPSUS AUREUS); Nephritis (SYNGONIUM PODOPHYLLUM)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A; 30% WP; sticker-spreader (Plyac)
APPLICATION METHODS: Postemergence spray to run-off; 3X applications at weekly intervals
EXPERIMENTAL CONDITIONS: Greenhouse study; temperatures--80 to 85 F (day) and 62 to 68 F (night); RH--60 to 95%; evaluation time--1 wk
EFFECTS: Slight to moderate injury mostly at 2X(2.0 lb/A) application rate to schefflera, parlour palm, dieffenbachia, fluffy ruffle, peperomia, podocarpus, golden pothos, and nephthytis; no injury to remaining plants
COMMENTS: Almost one-half plants exhibited some phytotoxic response; most sensitive plants were schefflera, fluffy ruffle fern, peperomia, and golden pothos; most toxic chemicals were plictran and omite and least phytotoxic materials were zectran and pirimor
REFERENCE: Short, D.E. and D.B. McConnell, "Pesticide Phytotoxicity to Ornamental Plants," Proc. Fla. St. Hort. Soc. 86:439-442 (1974).

<4116>
CHEMICAL NAME: Sulfurous acid, 2-[4-(1,1-dimethylethyl)phenoxy]cyclohexyl 2-propynyl ester
CHEMICAL COMMON NAME: Propargite
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.45 aihg
APPLICATION METHODS: 3 applications, 7 days apart with hand sprayer; 30% WP formulation
EXPERIMENTAL CONDITIONS: Cultivars--'snow ridge', 'yellow Delaware', 'torch', 'Delaware', 'snow pink', 'hostess', 'nob hill', yellow Bonnie Jean', and 'orange bowl'; initial application June 13
EFFECTS: No flower injury or foliage damage
COMMENTS: Trade name, Omite--miticide; 'snow pink', 'hostess', and 'yellow Bonnie Jean' not treated
REFERENCE: Poe, S.L., "Evaluations of Pesticides for Phytotoxicity on Chrysanthemum Flowers," Proc. Fl. State Hortic. Soc. 83:469-471 (1970).

<4117>
CHEMICAL NAME: Sulfurous acid, 2-[4-(1,1-dimethylethyl)phenoxy]cyclohexyl 2-propynyl ester
CHEMICAL COMMON NAME: Propargite
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 1.5 lb/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to palm and gardenia
COMMENTS: 30% WP formulation; trade name Omite; rated unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<4118>
<4118>
CHEMICAL NAME: Sulfurous acid, 2-[4-(1,1-dimethylethyl)phenoxy]cyclohexyl 2-propynyl ester
CHEMICAL COMMON NAME: Propargite
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 1.5 lb/100 gal--based upon concentration of formulation per 100 gal water
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to palm and gardenia
COMMENTS: 3% WP formulation; trade name Omite; rated unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<4119>
CHEMICAL NAME: Sulfurous acid, 2-[4-(1,1-dimethylethyl)phenoxy]cyclohexyl 2-propynyl ester
CHEMICAL COMMON NAME: Propargite
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA);Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Dracena (DRACAENA SANDERIANA); Prayer plant (MARANTA LEUCONEURA); Sword-fern (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
EXPERIMENTAL DOSE: 0.45 and 0.9 lb/100 gal
APPLICATION METHODS: Amount formulated--1.5 and 3.0 lb respectively; 4 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume equivalent); Plyac (spreader-sticker) added to controls and treatments at rate of 2 oz/100 gal water; sprays applied prior to 10:00 a.m.; 5 tests from May to November; temperature-- 83 to 98 F (day and 56 to 78 F (night); greenhouse conditions
EFFECTS: A. SQUARROSA--moderate injury at 0.45 lb (chlorotic and necrotic flecking), sever injury at 0.9 lb (chlorotic and necrotic flecking); B. ACTINOPHYLLA--slight injury at 0.45 lb (ring-like depression in upper leaf surface beneath residue), moderate injury at 0.9 lb (ring-like depression in upper leaf surface beneath residue, chlorotic and necrotic flecking); C. ELGANS--moderate injury at 0.45 lb, severe injury at 0.9 lb (both injuries = chlorotic and necrotic streaking and flecking); D. PICTA--moderate injury at 0.45 lb, severe injury at 0.9 lb (both injuries = chlorotic and necrotic streaking); D. SANDERIANA--no injury; M. LEUCONEURA--no injury; N. EXALTATA--severe injury at both rates (marginal chlorosis and necrosis, tip necrosis, and growth suppression); P. OBTUSIFOLIA--moderate injury at both rates (marginal chlorosis and necrosis, leaf deformity); P. OXYCARDIUM--no injury at 0.45 lb, moderate injury 0.9 lb (leaf deformity); S. AUREUS--moderate injury at 0.45 lb (leaf deformity), moderate injury at 0.9 lb (leaf deformity, chlorotic and necrotic flecking); powder-like residue on all plants at 0.9 lb
COMMENTS: Experimental concentrations--recommended and twice the recommended rate
REFERENCE: Hamlen, R.A. and R.W. Henley, "Phytotoxicity to Tropical Foliage Plants of Repeated Insecticide and Miticide Applications Under Fiberglass-Covered Greenhouse Conditions," Proc. Fla. State Hort. Soc. 99:336-338 (1976).

<4120>
CHEMICAL NAME: Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester
CHEMICAL COMMON NAME: Aramite
PLANT: Elm, American (ULMUS AMERICANA); Maple, sugar (ACER SACCHARUM); Oak, northern red (QUERCUS BOREALIS); Magnolia (MAGNOLIA GLAUCA); Wayfaring-tree (VIBURNUM LANTANA); Washington thorn (CRATAEGUS PHAENOPYRUM); Apple (PYRUS MALUS); Basswood (TILIA CORDATA); Lilac (SYRINGA sp.); Alder, black (ALNUS GLUTINOSA); Redbud (CERCIS CANADENSIS); Willow (SALIX sp.); Sourwood (OXYDENDRUM ARBOREUM); Red willow (CORNUS AMOMUM); (DEUTZIA SCABRA); Privet (LIGUSTRUM OBTUSIFOLIUM); Honeysuckle (LONICERA sp.); Spiraea, false (SORBARIA SORBIFOLIA); Spindle-tree (EUONYMUS BUNGEANUS); Horsechestnut (AESCULUS PARVIFLORA); Arrow-wood (VIBURNUM DILATATUM); Hydrangea (HYDRANGEA sp.); Smoke-tree (COTINUS COGGYGRIA); Yellowwood (CLADRASTIS LUTEA); Lilac (SYRINGA JAPONICA); Lilac (SYRINGA VILLOSA); Pine, white (PINUS STROBUS)
EXPERIMENTAL DOSE: 3% solution
APPLICATION METHODS: Solutions formulated with relatively non-phytotoxic Sovaspray 100 as carrier and commercial xylene as co-solvent on both leaf surfaces
EXPERIMENTAL CONDITIONS: Acaricides--diluted 1 part acaricide concentrate to 4 parts carrier to give 3% toxicant formulation; insecticides--diluted 1 part concentrate to 4 parts carrier to give 5% toxicant formulation; concentrates formed by dissolving acaricides and insecticides in xylene; July and August treatments
EFFECTS: Severe injury--A. SACCHARUM, MALUS spp., T. CORDATA, SYRINGIA spp., V. LANTANA, SALIX spp., LONICERA spp., S. SORBIFOLIA; moderate injury--C. PHAENOPYRUM, C. CANADENSIS, HYDRANGEA spp., C. LUTEA; no injury to P. STROBUS and E. BUNGERANUS; slight injury to other species
COMMENTS: Aramite--acaricide; no data for O. ARBOREUM, C. AMOMUM, D. SCABRA, V. DILATATUM, or C. COGGYGRIA
REFERENCE: Clower, D.F. and J.G. Matthysse, "Phytotoxicity of Insecticides in Mist Concentrate Type Formulations," J. Econ. Entomol. 47(5):735-738 (1954).

<4121>
CHEMICAL NAME: Sulphonate, sodium dodecylbenzene
CHEMICAL COMMON NAME: Sulphotex LAS
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: No survival at 1000 ppm and reduced survival at 100 ppm
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of

<4121> CONT.
surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<4122>
CHEMICAL NAME: Sulphonic acid betaine, n-alkyl(C12-C16)-dimethylammoniumpropane-
CHEMICAL COMMON NAME: Sulphobetaine DC
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: No survival of PHALAENOPSIS at 1000 ppm and reduced survival at 100 ppm; no growth of EPIDENDRUM at 100 and 1000 ppm
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<4123>
CHEMICAL NAME: Tannic acid
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 100 ppm
APPLICATION METHODS: Injection of 300ml fluid of test solution
EXPERIMENTAL CONDITIONS: Two 3-year old peach trees; injection holes drilled 30cm above soil line; trees injected while dormant, at bud swell stage, and at full leaf stage
EFFECTS: No injury
COMMENTS: 0.001M concentration dissolved in 0.1M dimethyl sulfoxide did not increase injury; effect on peach mosaic virus (strain PM-4) and necrotic ringspot virus also investigated
REFERENCE: Pine, T.S., "Reactions of Peach Trees and Peach Tree Viruses to Treatment with Dimethyl Sulfoxide and Other Chemicals," Phytopathology 57: 671-673 (1967).

<4124>
CHEMICAL NAME: TBA
CHEMICAL COMMON NAME: TBA
PLANT: Bluegrass, annual (POA ANNUA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplant solution soak
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Puyallup fine sandy loam; pH--5.8; temperature--approx 60 F
EFFECTS: No effect on bluegrass or bentgrass
COMMENTS: Dacthal, betasan, dipropalin, trifluralin, and enide significantly controlled annual bluegrass for periods of 9 to 12 weeks; dacthal and betasan completely nonphytotoxic to mature turf
REFERENCE: Goss, R.L., "Preemergence Control of Annual Bluegrass (POA ANNUA L.)," J. Agron. 56(1):479-481 (1964).

<4125>
CHEMICAL NAME: Tergitol TMN
CHEMICAL COMMON NAME: Tergitol TMN
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<4126>
CHEMICAL NAME: Tergitol 15-S-9
CHEMICAL COMMON NAME: Tergitol 15-S-9
PLANT: Orchid, Alice Gloria (PHALAENOPSIS sp.); Orchid, O'Brienianum (EPIDENDRUM sp.)
EXPERIMENTAL DOSE: 10 to 1000 ppm
APPLICATION METHODS: Addition to culture medium on which orchid seedlings were growing
EXPERIMENTAL CONDITIONS: Greenhouse study; agar culture medium; pH--5.1; temperature--20 to 26 C; photoperiod--12 hr; light intensity--120 to 600 ft candles; evaluation time--80 to 270 da
EFFECTS: Reduced survival of PHALAENOPSIS at 100 and 1000 ppm; no growth of EPIDENDRUM at 1000 ppm
COMMENTS: Pronounced phytotoxic effects occurred on culture media containing high concentrations of surfactants; concentration of ionics above 100 ppm most damaging and also caused a 90% or greater reduction of interfacial tension; nonionic ethoxylates reduced growth and viability at lower concentrations than ionics
REFERENCE: Ernst, R., J. Arditti, and P.L. Healey, "Biological Effects of Surfactants. I. Influence on the Growth of Orchid Seedlings," New Phytol. 70:457-475 (1971).

<4127>
<4127>
CHEMICAL NAME: Tergitol 1559
CHEMICAL COMMON NAME: Tergitol 15-S-9
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<4128>
CHEMICAL NAME: Tetradecane
CHEMICAL COMMON NAME: N-tetradecane
PLANT: Sunflower (HELIANTHUS ANNUUS); Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect
EFFECTS: No damage to leaf cells of sunflower or carrot.
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<4129>
CHEMICAL NAME: Tetradecanoic acid, 4,6-dinitro-, 2-methyl phenyl ester
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Slight phytotoxic effect of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<4130>
CHEMICAL NAME: Tetranactin
CHEMICAL COMMON NAME: Tetranactin
PLANT: Tea (Theaceae family); Orange, mandarin; Apple (PYRUS MALUS)
EXPERIMENTAL DOSE: 100 and 200 ppm
APPLICATION METHODS: Aqueous suspensions sprayed on mite infested plants
EXPERIMENTAL CONDITIONS: Several aspects of miticidal activity of tetranactin investigated
EFFECTS: No phytotoxicity
COMMENTS: Mites--carmine spider mite (TETRANYCUS CINNABARIUS) and two-spotted spider mite (T. URTICAE)
REFERENCE: Hirano, S., T. Sagawa, H. Takahashi, N. Tanaka, H. Oishi, K. Ando, and K. Togashi, "Tetranactin, A New Miticidal Antibiotic. IV. Some Properties of Tetranactin," J. Econ. Entomol. 66(2):349-351 (1973).

<4131>
CHEMICAL NAME: Tetraphosphoric acid, hexaethyl ester
CHEMICAL COMMON NAME: HETP
PLANT: Carnation
EXPERIMENTAL DOSE: 600 ppm
APPLICATION METHODS: Foliar spray to run-off; 2 ml Grasselli spreader
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time - 2 mos
EFFECTS: Branched flower stalk pattern and malformed flowers
COMMENTS: Abnormal flowering symptoms first observed in carnation caused by aqueous spray applications of hexaethyl tetraphosphate containing active constituent tetraethyl pyrophosphate; stimulatory, inhibitive, and lethal responses of tomato to TEPP occurred; formative effects, even at extremely high soil levels of super-phosphate, not produced by inorganic phosphorus applications
REFERENCE: Hall, W.C., "Morphological and Physiological Responses of Carnation and Tomato to Organic Phosphorus Insecticides and Inorganic Soil Phosphorus," Plant Physiol. 26:502-524 (1951).

<4132>
CHEMICAL NAME: Tetraphosphoric acid, hexaethyl ester
CHEMICAL COMMON NAME: HETP
PLANT: Amaryllis (AMARYLLIS sp.); Azalea (AZALEA sp.); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Strawberry (FRAGARIA sp.); Kalanchoe (KALANCHOE DIAGREMONTIANA); Tomato (LYCOPERSICON ESCULENTUM); Oxalis (OXALIS sp.); Smartweed, pale (POLYGONUM LAPATHIFOLIUM); Rose, wild (ROSA sp.); Chickweed, common (STELLARIA MEDIA); (STEVIA sp.); (TIGRIDIA sp.); Clover, alsike (TRIFOLIUM HYBRIDUM); Watercress (TROPAEOLUM HYBRIDUM); Begonia (BEGONIA SEMPERFLORENS); Rose mallow (HIBISCUS ROSA-SINENSIS); Lily, spider (HYMENOCOLLIS sp.); Passion flower (PASSIFLORA sp.); Moonflower (COLONYCTION sp.); Clematis (CLEMATIS sp.); Mint (MENTHA sp.); Petunia (PETUNIA sp.); Oak (QUERCUS sp.); Saxifrage (SAXIFRAGA sp.); (CAMELLIA sp.); (CITRUS sp.); (DAPHNE sp.); Orchid, O'Brienianum (EPIDENDRUM sp.); Holly (ILEX sp.); Daffodil (NARCISSUS sp.); (NEPHROLEPIS sp.); Violet, African (SAINTPAULA IONANTNA); Nightshade (SOLANUM sp.); Orchid, vanilla (VANILLA sp.)
EXPERIMENTAL DOSE: 15 ml/4250 cu ft (vapor); 25 to 500 mg/50 ml (solutions)
APPLICATION METHODS: Fumigation and addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Slight to moderate injury to tomato, strawberry, chrysanthemum, and rose with no adverse effect on most test plants exposed
COMMENTS: TEPP first injured leaves and caused epinastic responses; latter response assumed to be associated with decomposition product, ethylene; hexamethyl tetraphosphate, used in the same way, did not injure leaves or cause epinasty
REFERENCE: Zimmerman, P.W. and A. Hartzell, "Hexaethyl Tetraphosphate and Tetraethyl Pyrophosphate: I. Their Effects on Plants. II. Their Toxicities to Insects and Mites," Contrib. Boyce Thompson Inst. 15:11-19 (1947-1949).

<4133>
CHEMICAL NAME: Tetrazole-2-acetic acid, 5-(4-chlorophenyl)-2H-, ethyl ester
CHEMICAL COMMON NAME: PP-528
PLANT: Apple (PYRUS MALUS); Plum (PRUNUS DOMESTICA); Cherry (PRUNUS sp.); Grape (VITIS sp.); Forsythia (FORSYTHIA sp.); Deautzia (DEAUTZIA sp.); Weigelia (WEIGELIA sp.); Peanut (ARACHIS HYPOGAEA); Bean, snap (PHASEOLUS VULGARIS); Pea, sweet (PISUM SATIVUM); Brussels sprouts (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 50 to 500 ppm and/or 0.5 to 2.0 kg/ha; 0.1% Cirrasol ALN-WF
APPLICATION METHODS: Foliar spray; 400 l./ha (field) and 1200 l./ha
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Reduced growth of stem or branches and other effects at varied application rates sometimes with minor phytotoxicity at highest rates
COMMENTS: Foliar application selectively inhibited terminal growth of many woody and non-woody species; vegetable shoot growth of apple, plum and cherry effectively reduced; results on apple and plum comparable to daminozide; internode length reduced with apple and cherry but not plum; phytotoxicity usually restricted to minor chlorosis and leaf curl; no fruit damage observed
REFERENCE: England, D.J.F., "PP528 - A New Phenyl Tetrazole Plant Growth Regulator," Proc. 12th. Br. Weed Cont. Conf. 1:123-130 (1974).

<4134>
CHEMICAL NAME: TH-30-843
CHEMICAL COMMON NAME: Th-30-843
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: In preplant application, poor-moderate control of broadleaf weeds; effective control of grass; severe tomato phytotoxicity
COMMENTS: Metribuzin, napropamide, and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<4135>
CHEMICAL NAME: Thiadiazine-2-thione, 3,4-dimethyltetrahydro-1,3,5-2H-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: At 20.0 lb rate, effective initial control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4136>
<4136>
CHEMICAL NAME: Thiazole, 5-bromo-2-cyclopropanecarbonamide-
CHEMICAL COMMON NAME: M&B-14255
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Lamb's-quarters (CHENOPODIUM ALBUM); Carpetweed (MOLLUGO VERTICILLATA); Foxtail (SETARIA sp.); Nutsedge, yellow (CYPERUS ESCULENTUS); Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Preemergence (late) spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At 4.0 lb/A, effective weed control overall with no adverse effect on soybean
COMMENTS: Controlled all broadleaf and most grassy weeds present; four pounds did not cause injury to soybeans
REFERENCE: Szabo, J.G., "Results of M&B 14255 Application on Soybeans in Indiana, 1971," Proc. W. Cent. Weed Confr. Conf. 26:48-49 (1971).

<4137>
CHEMICAL NAME: Thiazolium, 3-[(4-amino-2-methyl-5-pyrimidinyl)methyl]-5-(2-hydroxyethyl)-4-methyl-, chloride
CHEMICAL COMMON NAME: Vitamin B(1)
PLANT: Kalanchoe (KALANCHOE DIAGREMONTIANA); (BRYOPHYLLUM CALYCINUM); (NICOTINIA GLAUCA); Sunflower (HELIANTHUS ANNUUS); Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.0 to 3.0% in hydrous lanolin
APPLICATION METHODS: Lanolin applied to decapitated plants or to injured (needle prick) stem soft tissue
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Varied cancerous growths induced in plants with carcinogenic agents or growth substances
COMMENTS: Scharlach red found active in some cases with KALANCHOE DAIGREMONTIANA; application to apical internode after decapitation produced overgrowths which resembled crown galls; other carcinogens like 1,2,5,6-dibenzanthracene,3,4-benzpyrene, methylcholanthrene induced necrosis of treated zone; indoleacetic acid in lanolin on decapitated and injured stems induced root formation; stems cracked and small nodular masses formed; small overgrowths on decapitated kalanchoes present histological pictures identical with crown gall
REFERENCE: Levine, M., "Plant Responses to Carcinogenic Agents and Growth Substances: Their Relation to Crown Gall and Cancer," Bull. Torrey Bot. Club 67:199-226 (1940).

<4138>
CHEMICAL NAME: Thiocyanate, dinitrobenzene-
CHEMICAL COMMON NAME: Dinitrobenzenethiocyanate
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4139>
CHEMICAL NAME: Thiocyanic acid, ammonium salt
CHEMICAL COMMON NAME: Ammonium thiocyanate
PLANT: Radish (RAPHANUS SATIVUS); Ryegrass, perennial (LOLIUM PERENNE); Bentgrass, black (AGROSTIS GIGANTEA); Plants; Redtop (AGROSTIS ALBA); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 2.0, 4.0, and 6.0 lb/1000 sq ft
APPLICATION METHODS: Added to soil
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: At 6.0 lb/1000 sq ft, effective weed control with delayed germination of radish, ryegrass, and redtop
COMMENTS: Several fertilizers and chemicals inhibited weed growth either by killing seeds or by killing seedlings shortly after germination; materials applied dry or as spray solutions and thoroughly mixed by cultivation or raking into upper 2 or 3 inches of soil; period of time after treatment before grass, radishes, alfalfa, or seedlings of tomato, cabbage, or other crops could be planted safely varied with different materials and amounts applied; sterilizing soils with fertilizers or chemicals appears very practical method of controlling weeds and fertilizing seedbeds in one operation; especially true of fertilizers which do not appreciably alter soil complex and which do not leave residual toxicity for long periods
REFERENCE: DeFrance, J.A., R.S. Bell, and T.E. Odland, "Killing Weed Seeds in the Grass Seedbed by the Use of Fertilizers and Chemicals," J. Am. Soc. Agron. 39:530-535 (1947).

<4140>
CHEMICAL NAME: Thiocyanic acid, ammonium salt
CHEMICAL COMMON NAME: Ammonium thiocyanate
PLANT: Quackgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 120, 160, and 200 lb/A
APPLICATION METHODS: Treatments to 3 in. and to 10 in. tall grass
EXPERIMENTAL CONDITIONS: Greenhouse tests, comparisons made to ammounium and sodium salts of trichloroacetic acid (TCA)
EFFECTS: 20, 70, and 97% plant kill at 120, 160, and 200 lb/A; effects more pronounced on young plants
COMMENTS: Not as effective as the salts of TCA
REFERENCE: Carlson, R.F. and J.E. Moulton, "Use of the Ammonium Salt of Trichloroacetate, the Sodium Salt of Trichloroacetate, Ammonium Thiocyanate, and Herbicide "PB", in the Eradication of Grasses, and the Effect of These Chemicals on Strawberry and Raspberry Plants," Mich. Agric. Exp. Stn. Q. Bull. 30:413-421(1948).

<4141>
CHEMICAL NAME: Thiocyanic acid, calcium salt
CHEMICAL COMMON NAME: Calcium thiocyanate
PLANT: Bermudagrass, common (CYNODON DACTYLON); Crowfoot grass (ELEUSINE INDICA)
EXPERIMENTAL DOSE: 1.25 M
APPLICATION METHODS: 0.6 to 1.0 l./m(2)
EXPERIMENTAL CONDITIONS: 200 to 1000 plants per square meter
EFFECTS: Bermuda grass effectively controlled; crowfoot grass effectively controlled at 1 l./m(2) only if grass cut before treatment
COMMENTS: Heavy rains reduced effectiveness for bermuda grass control
REFERENCE: Fromm, F. and I.M. Vidal, "The Chemical Control of Bermuda Grass and of Crowfoot Grass," Science 99(2580):478 (1944).

<4142>
CHEMICAL NAME: Thiocyanic acid, calcium salt
CHEMICAL COMMON NAME: Calcium thiocyanate
PLANT: Nutsedge (CYPERUS sp.)
EXPERIMENTAL DOSE: 0.7, 1.5, and 2.0 N
APPLICATION METHODS: 1 l. solution per square meter
EXPERIMENTAL CONDITIONS: 250-500 nut grass plants per square meter; treatment to untilled ground and to tilled soil
EFFECTS: Untilled ground--1/10 of weeds survived and repopulated field; tilled ground--2 N solution reduced plants to less than 1% of control within 90 days
COMMENTS: Tilling soil enabled solution to reach bulbs, bulbs being more resistant than other plant parts
REFERENCE: Fromm, F., "The Eradication of Nut Grass," Science 96:337-338 (1942).

<4143>
CHEMICAL NAME: Thiocyanic acid, calcium salt
CHEMICAL COMMON NAME: Calcium thiocyanate
PLANT: Bermudagrass, common (CYNODON DACTYLON); Crowfoot grass (ELEUSINE INDICA)
EXPERIMENTAL DOSE: 0.625 M (0.5 to 3.0 l./sq m)
APPLICATION METHODS: Sprinkle application
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At 0.6 l. rate, kill of bermudagrass and moderate control of crowfoot grass at 1.0 to 1.5 rates
COMMENTS: CNS or ammonium sulfanate control Bermuda grass effectively if applied at ratio of 0.6 to 1 liter per square meter in dry season; CNS at ratio of 1 liter per square meter eradicated crowfoot grass only if the grass previously cut
REFERENCE: Fromm, F. and I.M. Vidal, "The Chemical Control of Bermuda Grass and of Crowfoot Grass," Science 99(2580):478 (1944).

<4144>
CHEMICAL NAME: Thiodiphosphoric (III,V) acid, tetrapropyl ester
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 4 lb/gal EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Serious foliage injury; 2 weeks after third spray, all plants dead except 2 treated with 0.031% concentration
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<4145>
CHEMICAL NAME: Thiodiphosphoric acid, tetrapropyl ester
CHEMICAL COMMON NAME: NPD
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.25 oz/bushel
APPLICATION METHODS: Seed treatment; WP formulations
EXPERIMENTAL CONDITIONS: Field study; slurry treatments of seed; plot--18-ft row with 100 seeds; 8 replications; 19-month old seeds
EFFECTS: Significant decrease in mean number of plants emerged; significant increase in number of mean emergence days
REFERENCE: Starks, K.J. and J.H. Lilly, "Insecticide Seed Treatment of Soybeans in Relation to Phytotoxicity and Seed-Corn Maggot Control," J. Econ. Entomol. 48(5):538-543 (1955).

<4146>
CHEMICAL NAME: Thioperioxydicarbonic diamide, tetramethyl-
CHEMICAL COMMON NAME: Tersan
PLANT: Crabgrass (DIGITARIA sp.); Bentgrass, creeping (AGROSTIS PALUSTRIS); Bentgrass, Rhode Island (AGROSTIS TENUIS)
EXPERIMENTAL DOSE: 1:10,000; 10 gal/1000 sq ft; applied 10 day intervals
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study

<4146>
<4146> CONT.
EFFECTS: Slight crabgrass control with no adverse effect on grasses of golf putting green
COMMENTS: Puraturf and Puratized 806, gave good control of crabgrass; twenty-two different treatments used but most had no appreciable effect on crabgrass
REFERENCE: DeFrance, J.A., "Water-Soluble Mercurials for Crabgrass Control in Turf," Greenkeepers' Rept. 15(1):30-31 (1947).

<4147>
CHEMICAL NAME: Thioperioxydicarbonic diamide, tetramethyl-
CHEMICAL COMMON NAME: Arason
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: No adverse effect
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<4148>
CHEMICAL NAME: Thioperioxydicarbonic diamide, tetramethyl-
CHEMICAL COMMON NAME: Lead arsenate
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bluegrass, annual (POA ANNUA); Fescue, creeping red (FESTUCA RUBRA); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, tall (FESTUCA ARUNDINACEA); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 440 to 1740 lb/A
APPLICATION METHODS: Applied to soil surface as preemergence spray; 35 to 40 psi
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; herbicides applied and seed planted at monthly intervals to determine residual effect; time period--1958 and 1959
EFFECTS: No adverse effect on turfgrasses except bent and common bluegrass (reduced germination) and moderate control of crabgrass at 1300 lb/A
COMMENTS: In pre-emergence crabgrass control study in turf, no significant differences found between calcium arsenate and arsenic complex + 7% nitrogen with respect to time of application; these herbicides effectively controlled crabgrass; however, arsenic complex + 7% nitrogen injured turf; fenac formulations did not satisfactorily control crabgrass and severely injured turf; chlordane most effective when applied in the spring but did not satisfactorily control crabgrass
REFERENCE: Juska, F.V., "Pre-emergence Herbicides for Crabgrass Control and Their Effects on Germination of Turfgrass Species," Weeds 9(1):137-144 (1961).

<4149>
CHEMICAL NAME: Thioperioxydicarbonic diamide, tetramethyl-
CHEMICAL COMMON NAME: Thiosan
PLANT: Pine, Monterey (PINUS RADIATA)
EXPERIMENTAL DOSE: 62 lb/A
APPLICATION METHODS: Addition to soil in which pine seedlings were grown
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Morphological changes in roots and mycorrhizae
COMMENTS: Internal alterations of mycorrhizae under influence of eradicants characterized by irregularities in shape of fungal mantle, restricted penetration of mycelia, and reduced development of Hartig net; external modifications of short roots suggested that biocides cause radical changes in exudates of rhizospheric organisms
REFERENCE: Wilde, S.A. and D.J. Persidsky, "Effect of Biocides on the Development of Ectotrophic Mycorrhizae in Monterey Pine Seedlings," Proc. Soil Sci. Soc. 20:107-110 (1956).

<4150>
CHEMICAL NAME: Thioperoxydicarbonic diamide, tetramethyl-
CHEMICAL COMMON NAME: Thiram
PLANT: Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 500 mg/100 g seed
APPLICATION METHODS: Applied to seed inoculated with RHIZOBIUM
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; evaluated at flowering stage
EFFECTS: Reduced nodulation and growth
COMMENTS: Seed disinfection had beneficial effect on stand of crop; fungicidal treatment had some adverse effect on nodulation and dry weight of plants; combinations always superior over control i.e. where neither inoculant nor fungicide applied
REFERENCE: Mukewar, P.M. and V.P. Bhide, "Effect of Seed Treatment With Fungicides and Antibiotic Aureofungin on Nodulation by RHIZOBIUM in Groundnut," Hindustan Antibiotics Bull. 12(2):75-80 (1970).

<4151>
CHEMICAL NAME: Thiophene-1,1-dioxide, 3-chloro-2,3-dihydro-chemical
PLANT: Turnip (BRASSICA RAPA); Flax (LINUM USITATISSIMUM); Alfalfa (MEDICAGO SATIVA); Ryegrass, perennial (LOLIUM PERENNE); Millet, foxtail (SETARIA ITALICA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 16 lb/A
APPLICATION METHODS: Preemergence treatment 24 hr after planting
EXPERIMENTAL CONDITIONS: Germination tests in 9 X 9 X 2 inch aluminum pans
EFFECTS: Germination completely inhibited
COMMENTS: Dehydrochlorination product of the compound PRD
REFERENCE: Schuldt, P. H. and H. Bluestone, "Nematocidal Properties of 3,4-Dichlorotetrahydrothiophene-1,1-Dioxide (PRD)," Contrib. Boyce Thompson Inst. 19:63-75(1957).

<4152>
CHEMICAL NAME: Thiophene-1,1-dioxide, 3,4-dichlorotetrahydro-
PLANT: Turnip (BRASSICA RAPA); Flax (LINUM USITATISSIMUM); Alfalfa (MEDICAGO SATIVA); Ryegrass, perennial (LOLIUM PERENNE); Millet, foxtail (SETARIA ITALICA); Wheat (TRITICUM AESTIVUM); Corn (ZEA MAYS); Tomato (LYCOPERSICON ESCULENTUM); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 64 lb/A and 0.64%
APPLICATION METHODS: 0.64%--as spray to 4-week old tomato plants, and to 2-week old corn and oat plants; 64 lb/A--preemergence treatment
EXPERIMENTAL CONDITIONS: Turnip, flax, alfalfa, millet, rye grass, and wheat germination tests, exposure to 64 lb/A in 9 X 9 X 2 inch aluminum pan 24 hr after planting; tomato, corn, and oat plants sprayed with 0.64% solution
EFFECTS: Germination completely inhibited; Foliage Spray caused no observed injury
COMMENTS: Germinating seed quite sensitive, foliage very tolerant; primary exphasis of paper was nematocidal properties
REFERENCE: Schuldt, P. H. and H. Bluestone, "Nematocidal Properties of 3,4-Dichlorotetrahydrothiophene-1,1-Dioxide (PRD)," Contrib. Boyce Thompson Inst. 19:63-75(1957).

<4153>
CHEMICAL NAME: Thiourea
CHEMICAL COMMON NAME: Thiourea
PLANT: Nectarine (PRUNUS PERSICA); Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0, 2.0, 3.0, and 4.0%
APPLICATION METHODS: Postemergence spray of flower buds; 2000 l./ha
EXPERIMENTAL CONDITIONS: Field study; applications in Dec., Jan., and Feb. 1972-1973
EFFECTS: Depending on time of application, 49-84% of flower buds were thinned in nectarine (2-3% thiourea) and significant numbers of peach buds were also thinned out at 1-2% thiourea
COMMENTS: Thiourea thinned nectarine flower buds effectively when sprayed at beginning of bud swell; flower-bud thinning not accompanied by any significant phytotoxicity at this period
REFERENCE: Erez, A., "Thiourea, a New Thinning Agent for Early-Ripening Peaches and Nectarines," Hortsic. 10(3):251-253 (1975).

<4154>
CHEMICAL NAME: Thiourea
CHEMICAL COMMON NAME: Thiourea
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<4155>
CHEMICAL NAME: Thiourea, N-(1-methylethyl)-N'-phenyl-
PLANT: Barley (HORDEUM VULGARE); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, and 200 mg/l.
APPLICATION METHODS: In agar medium
EXPERIMENTAL CONDITIONS: Seven days growth from seed on agar medium containing test compound; all concentrations tested, 2 additional tests at 200 mg/l. with 3 replications; diuron used as standard; root length expressed as percent of control
EFFECTS: Barley root length 29.70%, radish root length 68.03%
COMMENTS: Barley root length 6.10% and radish root length 32.19% from diuron exposure; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G., L. Iliev, and K. Dobrev, "Herbicidal Activity of Certain Thiourea Derivatives," C. R. Acad. Bulg. Sci. 20(11):1193-1195(1967).

<4156>
CHEMICAL NAME: Thiourea, N-(1,1-dimethylethyl)-N'-phenyl-
PLANT: Barley (HORDEUM VULGARE); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, and 200 mg/l.
APPLICATION METHODS: In agar medium
EXPERIMENTAL CONDITIONS: Seven days growth from seed on agar medium containing test compound; all concentrations tested, 2 additional tests at 200 mg/l. with 3 replications; diuron used as standard; root length expressed as percent of control

<4156>
<4156> CONT.
EFFECTS: Barley root length 13.75%, radish root length 40.25%
COMMENTS: Barley root length 6.10% and radish root length 32.19% from diuron exposure; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G., L. Iliev, and K. Dobrev, "Herbicidal Activity of Certain Thiourea Derivatives," C. R. Acad. Bulg. Sci. 20(11):1193-1195(1967).

<4157>
CHEMICAL NAME: Thiourea, N-butyl-N'-phenyl-
PLANT: Barley (HORDEUM VULGARE); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, and 200 mg/l.
APPLICATION METHODS: In agar medium
EXPERIMENTAL CONDITIONS: Seven days growth from seed on agar medium containing test compound; all concentrations tested, 2 additional tests at 200 mg/l. with 3 replications; diuron used as standard; root length expressed as percent of control
EFFECTS: Barley root length 12.70%, radish root length 44.26%
COMMENTS: Barley root length 6.10% and radish root length 32.19% from diuron exposure; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G., L. Iliev, and K. Dobrev, "Herbicidal Activity of Certain Thiourea Derivatives," C. R. Acad. Bulg. Sci. 20(11):1193-1195(1967).

<4158>
CHEMICAL NAME: Thiourea, N-ethyl-N'-phenyl-
PLANT: Barley (HORDEUM VULGARE); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, and 200 mg/l.
APPLICATION METHODS: In agar medium
EXPERIMENTAL CONDITIONS: Seven days growth from seed on agar medium containing test compound; all concentrations tested, 2 additional tests at 200 mg/l. with 3 replications; diuron used as standard; root length expressed as percent of control
EFFECTS: Barley root length 59.50%, radish root length 55.33%
COMMENTS: Barley root length 6.10% and radish root length 32.19% from diuron exposure; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G., L. Iliev, and K. Dobrev, "Herbicidal Activity of Certain Thiourea Derivatives," C. R. Acad. Bulg. Sci. 20(11):1193-1195(1967).

<4159>
CHEMICAL NAME: Thiourea, N,N-dimethyl-N'-phenyl-
PLANT: Barley (HORDEUM VULGARE); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, and 200 mg/l.
APPLICATION METHODS: In agar medium
EXPERIMENTAL CONDITIONS: Seven days growth from seed on agar medium containing test compound; all concentrations tested, 2 additional tests at 200 mg/l. with 3 replications; diuron used as standard; root length expressed as percent of control
EFFECTS: Barley root length 85.38%, radish root length 47.89%
COMMENTS: Barley root length 6.10% and radish root length 32.19% from diuron exposure; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G., L. Iliev, and K. Dobrev, "Herbicidal Activity of Certain Thiourea Derivatives," C. R. Acad. Bulg. Sci. 20(11):1193-1195(1967).

<4160>
CHEMICAL NAME: Thiourea, N,N,-dimethyl-N'-(2-propenyl)-
PLANT: Barley (HORDEUM VULGARE); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 50, 100, and 200 mg/l.
APPLICATION METHODS: In agar medium
EXPERIMENTAL CONDITIONS: Seven days growth from seed on agar medium containing test compound; all concentrations tested, 2 additional tests at 200 mg/l. with 3 replications; diuron used as standard; root length expressed as percent of control
EFFECTS: Barley root length 55.49%, radish root length 37.02%
COMMENTS: Barley root length 6.10% and radish root length 32.19% from diuron exposure; 200 mg/l. described as most suitable concentration
REFERENCE: Vassilev, G., L. Iliev, and K. Dobrev, "Herbicidal Activity of Certain Thiourea Derivatives," C. R. Acad. Bulg. Sci. 20(11):1193-1195(1967).

<4161>
CHEMICAL NAME: Thioxanthen-9-one, 1[[2-(diethylamino)ethyl]amino]-4-(hydroxymethyl)-9H-
CHEMICAL COMMON NAME: Hycanthone
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 5 X 10(-6) M
APPLICATION METHODS: Immersion in test solutions for 2 hr
EXPERIMENTAL CONDITIONS: Laboratory study; lateral root tips of broad bean, tritiated cytidine and lysine used in autoradiography
EFFECTS: Inhibition of DNA and RNA synthesis
COMMENTS: RNA synthesis markedly inhibited in VICIA FABA root tip cells; DNA synthesis slightly inhibited while protein synthesis not affected
REFERENCE: Peterson, N.C. and S. Bell, "Effect of Hycanthone on Root Tips of VICIA FABA," Cytologia 39:515-524 (1974).

<4162>
CHEMICAL NAME: Threitol, 1,4-dimethanesulfonate
PLANT: Bean, broad (VICIA FABA); Goldthread (NIGELLA DAMASCENA)
EXPERIMENTAL DOSE: 40 mg/100 ml for 3 hr; d, l, and meso isomers
APPLICATION METHODS: Immersion in assay solutions after 21 hr soak of seeds in water
EXPERIMENTAL CONDITIONS: Laboratory study; chromosome aberrations in root tips evaluated
EFFECTS: Increased chromosome breakage; l form most active
COMMENTS: In some respects d and meso compounds behave as monofunctional alkylating agents, whereas the l compound had difunctional action; difference in activity at chromosome level the same as for other classes of alkylating agents; delayed effect much stronger for l compound just as in the case of difunctional alkylating agents
REFERENCE: Hunt, D.E., "Chromosome Breakage with Two Isomers of 1-Threitol 1,4-Bismethanesulfonate in Plants," Nature 210(5037):762-763 (1966).

<4163>
CHEMICAL NAME: Thuricide
CHEMICAL COMMON NAME: Thuricide
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 2.0 to 4.0 qt/100 gal
APPLICATION METHODS: Postemergence (postflowering) spray; 50-55 psi to run-off; sprayed 2X
EXPERIMENTAL CONDITIONS: Field (29.5 C) and laboratory (19 C); intact flowers in field and cut flowers in laboratory; spray applied directly to flowers
EFFECTS: No adverse effect on flowers
COMMENTS: Some compounds not phytotoxic after two applications under any conditions (daconil, dithane M-15, dithane Z-78, morsodren, orthocide, phosdrin and thuricide); among phytotoxic chemicals and combinations, there was a greater tendency for injury occurring at 1) high temperature than at the low, 2) fast drying rate than the slow, 3) high temperature at fast rather than slow drying rate, and 4) high temperature at fast drying rate than low temperature at the slow rate
REFERENCE: Engelhard, A.W., "Chemical Sprays: Concentration, Drying Rate and Temperature Effects on Chrysanthemum Flower Quality", Florida State Hort. Soc. 85:370-374 (1973).

<4164>
CHEMICAL NAME: Thuricide
CHEMICAL COMMON NAME: Thuricide
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Dracena (DRACAENA SANDERIANA); Prayer plant (MARANTA LEUCONEURA); Sword-fern (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
APPLICATION METHODS: Amount Formulated--1 and 2 lb; 4 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume euivalent); Plyac (spreader-sticker) added to controls and treatments at rate of 2 oz/100 gal water; sprays applied prior to 10:00 a.m.; 5 tests from May to November; temprature--83-98 F (day) and 56 to 78 F (night); greenhouse conditions
EFFECTS: No injury to any plant
COMMENTS: Biological insecticide formulated from bacterium BACILLUS THURINGIENSIS
REFERENCE: Hamlen, R.A. and R.W. Henley, "Phytotoxicity to Tropical Foliage Plants of Repeated Insecticide and Miticide Applications Under Fiberglass-Covered Greenhouse Conditions," Proc. Fla. State Hort. Soc. 89:336-338 (1976).

<4165>
CHEMICAL NAME: Toluene, ar, ar, ar, alpha-tetrachloro-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4166>
CHEMICAL NAME: Toluene, polycholo-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4167>
<4167>
CHEMICAL NAME: Toluene, trichloro-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4168>
CHEMICAL NAME: Toluic acid, dichloro-o-
CHEMICAL COMMON NAME: Dichloro-a-toluic acid
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: At 20.0 lb rate, effective weed control initially
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4169>
CHEMICAL NAME: Toluidine, alpha, alpha, alpha-trifluoro-m-
CHEMICAL COMMON NAME: TFMA
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Foxtail (SETARIA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 2 to 25 ppmw (soil); 10 to 150 micro M (nutrient solution)
APPLICATION METHODS: Addition to soil or nutrient solution
EXPERIMENTAL CONDITIONS: Greenhouse study; clay soil pH--7.4; environmental chamber-- 14 hr photoperiod, 30 C (day) and 20 C (night), and 16,100 lumens/sq m; laboratory study--manometric
EFFECTS: Least active of 4 fluometuron derivatives in soil study; minor growth reduction
COMMENTS: Fluometuron most active compound, and demethylated derivative and aniline analog least phytotoxic; activity of monomethyl analog of fluometuron applied via nutrient solution and to clay soil about 50% and 70% of parent compound, respectively; photosynthesis in cotton and redroot pigweed inhibited by fluometuron, to lesser degree by monomethyl analog, and not at all by demethyl and aniline analogs
REFERENCE: Rubin, B. and Y. Eshel, "Phytotoxicity of Fluometuron and Its Derivatives to Cotton and Weeds," Weed Sci. 19(5):592-594 (1971).

<4170>
CHEMICAL NAME: Toluidine, 2,6-dinitro-N,N-di-n-propyl-alpha, alpha, alpha-trifluoro-p-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4171>
CHEMICAL NAME: Toxaphene
CHEMICAL COMMON NAME: Toxaphene
PLANT: Cabbage, Chinese (BRASSICA PEKINENSIS)
EXPERIMENTAL DOSE: 0.6 kg/ha
APPLICATION METHODS: Insecticidal spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; pollen collected at various times after application; evaluation time--6 hr to 21 da
EFFECTS: Significant pollen sterility for 1 to 14 days
COMMENTS: Most insecticides affected pollen viability only for first 4-5 days, except a few which affected it even up to 12 or 15 days
REFERENCE: Lal, O.P., "Insecticidal Sprayings Causing Pollen Sterility in Chinese Cabbage," Act. Agron. Acad. Scient. Hungar. 24:145-147 (1975).

<4172>
CHEMICAL NAME: Toxaphene
CHEMICAL COMMON NAME: Toxaphene
PLANT: Elm, American (ULMUS AMERICANA); Maple, sugar (ACER SACCHARUM); (CRATAEGUS CORDATA); Pine, white (PINUS STROBUS); Poplar (POPULUS sp.); Willow (SALIX sp.); Oak, pin (QUERCUS PALUSTRIS); Hickory, shagbark (CARYA OVATA); Wayfaring-tree (VIBURNUM LANTANA)
EXPERIMENTAL DOSE: 5% solution
APPLICATION METHODS: Solutions formulated with relatively non-phytotixic Sova spray 100 as carrier and commercial xylene as co-solvent; mist applied to point of drip off on both leaf surfaces
EXPERIMENTAL CONDITIONS: Acaricides--diluted 1 part acaricide concentrate to 4 parts carrier to give 3% toxicant formulation; insecticides--diluted 1 part concentrate to 4 parts carrier to give 5% toxicant formulation; concentrates formed by dissolving acaricides and insecticides in xylene; July and August treatments
EFFECTS: Severe injury--SALIX spp.; moderate injury--A. SACCHARUM, C. CORDATA, and POPULUS spp.; no injury to P. STROBUS; slight injury to other species
COMMENTS: Used as insecticide; P. STROBUS--least injury of species tested
REFERENCE: Clower, D.F. and J.G. Matthysse, "Phytotoxicity of Insecticides in Mist Concentrate Type Formulations," J. Econ. Entomol. 47(5):735-738 (1954).

<4173>
CHEMICAL NAME: Toxaphene
CHEMICAL COMMON NAME: Toxaphene
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 12.5, 50.0, and 100.0 ppm
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Arredondo loamy fine sand; pot culture
EFFECTS: No adverse effect on germination or growth
COMMENTS: BHC decreased germination; all other insecticides increased germination or had no effect; root and top weights decreased by chlordane, lindane, aldrin, dieldrin, TDE, DDT and BHC; top weights reduced by methoxychlor; heptachlor and toxaphene had no effect on growth
REFERENCE: Eno, C.F. and P.H. Everett, "Effects of Soil Applications of 10 Chlorinated Hydrocarbon Insecticides on Soil Microorganisms and the Growth of Stringless Black Valentine Beans," Soil Sci. Soc. Am. Proc. 22:235-238 (1958).

<4174>
CHEMICAL NAME: Triazine, 2-(diethylamino)-4-(isopropylamino)-6-methoxy-s-
CHEMICAL COMMON NAME: Ipatone
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time--11 da
EFFECTS: Minimum lethal concentration 6.15 to 4.45 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<4175>
CHEMICAL NAME: Triazine, 2-(isopropylamino)-4-methoxy-6-(methylamino)-s-
CHEMICAL COMMON NAME: G-32292
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.38 to 4.80 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<4176>
CHEMICAL NAME: Triazine, 2-chloro-4-ethylamino-6-isopropylamino-s-, compd. with 2,4-bis(isopropylamino)-6-methylthio-s-triazine
CHEMICAL COMMON NAME: Primaze
PLANT: Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Pigweed (AMARANTHUS sp.); Jimsomweed (DATURA STRAMONIUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 80% WP Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravely silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Moderate control of grass weeds and effective control of broadleafs with good corn tolerance
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<4177>
<4177>
CHEMICAL NAME: Triazine, 2-isopropylamino-4,6-dichloro-s-
CHEMICAL COMMON NAME: TR-31
PLANT: Chickweed (AGERATUM CONYZOIDES); Beet (BETA sp.); Tomato (LYCOPERSICON ESCULENTUM); Oat (AVENA SATIVA); Bean, kidney (PHASEOLUS VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Chickweed, common (STELLARIA MEDIA); Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 1% solution (equivalent to 10 kg/ha)
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; field study
EFFECTS: Plants all killed except oats and bluegrass which were damaged
COMMENTS: Geigy 444 caused only slight damage to plant growth; with other s-triazines, all weeds killed with exception of blue grass, which recovered after a time; new triazines promising as pre-emergence herbicides
REFERENCE: Koopman, H., J.H. Uhlenbroek, and J. Daams, "New S-Triazine Herbicides," Nature 180(4577):147-148 (1957).

<4178>
CHEMICAL NAME: Triazine, 2-methoxy-4-ethylamino-6-isopropylamino-s-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4179>
CHEMICAL NAME: Triazine, 2-methoxy-4,6-bis-(isopropylamino)-s-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4180>
CHEMICAL NAME: Triazine, 2-methylthio-4,6-bis(3-methoxypropylamino)-s-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4181>
CHEMICAL NAME: Triazine, 2-n-butylthio-4,6-dichloro-s-
CHEMICAL COMMON NAME: TR-35
PLANT: Chickweed (AGERATUM CONYZOIDES); Beet (BETA sp.); Tomato (LYCOPERSICON ESCULENTUM); Oat (AVENA SATIVA); Bean, kidney (PHASEOLUS VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Chickweed, common (STELLARIA MEDIA); Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 1% solution (equivalent to 10 kg/ha)
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; field study
EFFECTS: Plants all killed except oats and bluegrass which were damaged
COMMENTS: Geigy 444 caused only slight damage to plant growth; with other s-triazines, all weeds killed with exception of blue grass, which recovered after a time; new triazines promising as pre-emergence herbicides
REFERENCE: Koopman, H., J.H. Uhlenbroek, and J. Daams, "New S-Triazine Herbicides," Nature 180(4577):147-148 (1957).

<4182>
CHEMICAL NAME: Triazine, 2-pentoxy-4,6-dichloro-s-
CHEMICAL COMMON NAME: TR-110
PLANT: Chickweed (AGERATUM CONYZOIDES); Beet (BETA sp.); Tomato (LYCOPERSICON ESCULENTUM); Oat (AVENA SATIVA); Bean, kidney (PHASEOLUS VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Chickweed, common (STELLARIA MEDIA); Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 1% solution (equivalent to 10 kg/ha)
APPLICATION METHODS: Foliar spray

<4182> CONT.
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; field study
EFFECTS: Plants all killed except oats and bluegrass which were damaged
COMMENTS: Geigy 444 caused only slight damage to plant growth; with other s-triazines, all weeds killed with exception of blue grass, which recovered after a time; new triazines promising as pre-emergence herbicides
REFERENCE: Koopman, H., J.H. Uhlenbroek, and J. Daams, "New S-Triazine Herbicides," Nature 180(4577):147-148 (1957).

<4183>
CHEMICAL NAME: Triazine, 2,4-bis(diethylamino)-6-chloro-s-
CHEMICAL COMMON NAME: Geigy 444
PLANT: Azalea (RHODODENDRON INDICUM); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 4.0 lb/A; vermiculite carrier
APPLICATION METHODS: Broadcast
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control with no adverse effect on azalea
COMMENTS: PCP, DN, and CIPC superior at high rates against summer weeds in azalea beds, whereas fall weeds best controlled by CIPC, diuron, Geigy 444, and CDEC, no apparent foliar or other damage resulted from any treatments
REFERENCE: Chappell, W.E., "The Use of Granular Herbicides in Azaleas," Proc. Southern Weed Conf. 10:105-107 (1957).

<4184>
CHEMICAL NAME: Triazine, 2,4-bis(diethylamino)-6-chloro-s-
CHEMICAL COMMON NAME: Geigy 444
PLANT: Chickweed (AGERATUM CONYZOIDES); Beet (BETA sp.); Tomato (LYCOPERSICON ESCULENTUM); Oat (AVENA SATIVA); Bean, kidney (PHASEOLUS VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Chickweed, common (STELLARIA MEDIA); Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 1% solution (equivalent to 10 kg/ha)
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; field study
EFFECTS: Slight damage of plants
COMMENTS: Geigy 444 caused only slight damage to plant growth; with other s-triazines, all weeds killed with exception of blue grass, which recovered after a time; new triazines promising as pre-emergence herbicides
REFERENCE: Koopman, H., J.H. Uhlenbroek, and J. Daams, "New S-Triazine Herbicides," Nature 180(4577):147-148 (1957).

<4185>
CHEMICAL NAME: Trichothec-9-ene-3,4-15-triol, 12,13-epoxy-, 4,15-diacetate, (3 alpha, 4 beta)-
CHEMICAL COMMON NAME: Diacetosurpenol
PLANT: Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 0.1 to 1000 micro g/ml
APPLICATION METHODS: Immersion of root tips in test solutions for 30 hr
EXPERIMENTAL CONDITIONS: Laboratory study; germinating bulbs soaked 8 days then treated
EFFECTS: Reduced mitotic index especially in anaphase
COMMENTS: Most striking damage was reduction of mitotic index and metaphase arrest by all toxins; appearance of nuclei with two nucleoli as well as vacuolization of the cytoplasm under influence especially of diacetoxyscirpenol which proved to be most active toxin
REFERENCE: Reiss, J., "Mycotoxin Poisoning of ALLIUM CEPA Root Tips II. Reduction of Mitotic Index and Formation of Chromosomal Aberrations and Cytological Abnormalities by Patulin, Rubratoxin B and Diacetoxyscirpenol," Cytologia 40:703-708 (1975).

<4186>
CHEMICAL NAME: Tridecane
CHEMICAL COMMON NAME: N-tridecane
PLANT: Sunflower (HELIANTHUS ANNUUS); Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect
EFFECTS: No damage to leaf cells of sunflower or carrot
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<4187>
CHEMICAL NAME: Tridecanoic acid
CHEMICAL COMMON NAME: Tridecanoic acid
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity

<4187>
<4187> CONT.
measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.
EFFECTS: Moderate damage to sunflower leaf cells
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<4188>
CHEMICAL NAME: Triherbide NIX
CHEMICAL COMMON NAME: Triherbide NIX
PLANT: Spurrey, corn (SPERGULA ARVENSIS); Sorrel, wood (OXALIS LATIFOLIA)
EXPERIMENTAL DOSE: 20.0 lb/A
APPLICATION METHODS: Foliar spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of spurry with effective initial control of OXALIS for one week but not for four weeks
COMMENTS: Extar A and Triherbide NIX proved definitely better than others on SPERGULA ARVENSIS; were quick in action, while MCPA and mixture of sodium 2,4-D proved ineffective against this weed
REFERENCE: Narayanan, T.R. and D. Meenakshisundaram, "Studies on the Relative Efficacies of a Few Chemical Herbicides in the Control of SPERGULA ARVENSIS, L. and OXALIS LATIFOLIA HB&K., Two Important Weeds of the Nilgiris," Madras Agric. J. 45(1):1-6 (1958).

<4189>
CHEMICAL NAME: Triton B-1956
CHEMICAL COMMON NAME: Triton B-1956
PLANT: Lychee (LITCHI CHINENSIS)
EXPERIMENTAL DOSE: 1:250, 1:500, and 1:1000
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Local chlorosis at leaf tip
COMMENTS: Lychee leaves susceptible to ionic and nonionic surfactants; injury due to wetting agents ranged from complete necrosis of leaves to chlorosis and mottling and premature leaf fall
REFERENCE: Nakata, S. and Y. Tanada, "Phytotoxicity of Wetting Agents on Lychee," J. Econ. Ent. 54(6):1074-1076 (1961).

<4190>
CHEMICAL NAME: Triton X-152
CHEMICAL COMMON NAME: Triton X-152
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<4191>
CHEMICAL NAME: Triton X-172
CHEMICAL COMMON NAME: Triton X-172
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: Toxicity as determined by mitotic index
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<4192>
CHEMICAL NAME: Trypsin
CHEMICAL COMMON NAME: Trypsin
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.13 to 0.65 micro g/mg chlorophyll
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated oat chloroplasts
EFFECTS: Inhibited various biochemical pathways in photosynthesis
COMMENTS: Trypsin uncoupled, did not inhibit Photosynstem I between plastocyanin and ferredoxin, and inhibited at least two sites of electron transport on oxygen producing side of Photosystem II
REFERENCE: Selman, B.R. and T.T. Bannister, "Trypsin Inhibition of Photosystem II," Biochem. Biophys. Acta 253:428-436 (1971).

<4193>
CHEMICAL NAME: Turbuthiolazine
CHEMICAL COMMON NAME: Turbuthiolazine
PLANT: Spruce, sitka (PICEA SITCHENSIS)
EXPERIMENTAL DOSE: 0.5 and 1.0 kg/ha
APPLICATION METHODS: Pre- and postemergence spray in 50 ml/sq m solution
EXPERIMENTAL CONDITIONS: Herbicide screening trials; sandy loam soils; randomized block design; 1.0 x 1.0 m plot size; 3 year test
EFFECTS: Postemergence treatment rejected the first year; significant reduction in spruce height with preemergent treatment during second year
COMMENTS: Not tested in third year; weeds present in sufficient quantity for herbicide tests only in third year
REFERENCE: Brown, R.M., "Testing Various Herbicides, Including Diphenamid and Propham, for Weed Control in Seedbeds of Sitka Spruce (PICEA SITCHENSIS [Bong.] Carr.)," Brit. Weed Control Conf. 12:255-264 (1974).

<4194>
CHEMICAL NAME: Turbuthiolazine
CHEMICAL COMMON NAME: Turbuthiolazine
EXPERIMENTAL DOSE: 0.5 and 1.0 kg/ha
APPLICATION METHODS: Pre-and postemergence spray in 50 ml/sq m solution
EXPERIMENTAL CONDITIONS: Herbicide screening trials; sandy loam soils; randomized block design; 1.0 X 1.0 m plot size; 3 year test
EFFECTS: Postemergence treatment rejected the first year; significant reduction in spruce height with premergent treatment during second year
COMMENTS: Not tested in third year; weeds present in sufficient quantity for herbicide tests only in third year
REFERENCE: Brown, R.M., "Testing Various Herbicides, Including Diphenamid and Propham, for Weed Control in Seedbeds of Sitka Spruce (PICEA SITCHENSIS [Bong.] Carr.)," Brit. Weed Control Conf. 12:255-264 (1974).

<4195>
CHEMICAL NAME: U 44078
CHEMICAL COMMON NAME: U-44078
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 0.75 and 1.00 lb/A
APPLICATION METHODS: Preplant incorporated (4 in depth) spray; 15 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of nutsedge
COMMENTS: Cyperquat and bentazon in postemergence application most effective herbicides, and CGA-24705 and U-44344 in preplant incorporated application most effective; perfluidone most effective preemergence application
REFERENCE: Kurtz, W.L. and E.W. Stroube, "Control of Yellow Nutsedge by Various Herbicides," Proc. N. Cent. Weed Contr. Conf. 30:59 (1975).

<4196>
CHEMICAL NAME: U 44344
CHEMICAL COMMON NAME: U-44344
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 0.75 and 1.00 lb/A
APPLICATION METHODS: Preplant incorporated (4 in depth) spray; 15 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of nutsedge
COMMENTS: Cyperquat and bentazon in postemergence application most effective herbicides, and CGA-24705 and U-44344 in preplant incorporated application most effective; perfluidone most effective preemergence application
REFERENCE: Kurtz, W.L. and E.W. Stroube, "Control of Yellow Nutsedge by Various Herbicides," Proc. N. Cent. Weed Contr. Conf. 30:59 (1975).

<4197>
CHEMICAL NAME: Ultra Wet
CHEMICAL COMMON NAME: Ultra Wet
PLANT: Lychee (LITCHI CHINENSIS)
EXPERIMENTAL DOSE: 1:300 and 1:400
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Local chlorosis at leaf tip
COMMENTS: Lychee leaves susceptible to ionic and nonionic surfactants; injury due to wetting agents ranged from complete necrosis of leaves to chlorosis and mottling and premature leaf fall
REFERENCE: Nakata, S. and Y. Tanada, "Phytotoxicity of Wetting Agents on Lychee," J. Econ. Ent. 54(6):1074-1076 (1961).

<4198>
CHEMICAL NAME: Undecane
CHEMICAL COMMON NAME: N-undecane
PLANT: Sunflower (HELIANTHUS ANNUUS); Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect

<4198>
<4198> CONT.
EFFECTS: Slight injury of leaf cells of sunflower with no injury to carrot leaf cells
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<4199>
CHEMICAL NAME: Undecanoic acid
CHEMICAL COMMON NAME: Undecylenic acid
PLANT: Viburnum (VIBURNUM SUSPENSUM); Hawthorn, red (CRATAEGUS sp.); Hibiscus (HIBISCUS ROSA); Holly (ILEX sp.); Spruce, white (PICEA GLAUCA); Apple (MALUS SYLVESTRIS); Peach (PRUNUS PERSICA); Rose, wild (ROSA sp.); Bean, snap (PHASEOLUS VULGARIS); Lilac (SYRINGA sp.)
EXPERIMENTAL DOSE: 0.5, 1.0 and 3.2%; acid and triethanolamine salt; 0.25% Nekal NS
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At 1.0%, defoliation of tea rose, hawthorn, and bean with lesser effect on viburnum and no effect on apple, peach, holly, lilac, and spruce; acid form more active
COMMENTS: Monochloroacetic acid and undecylenic acid at a range of 0.5 to 3.2% had defoliating properties; effectiveness depends upon species, formulation, and concentration
REFERENCE: Zimmerman, P.W., A.E. Hitchcock, and H. Kirkpatrick, "Killing of Leaves and Defoliation of Plants by Chemical Means," Proc. N.E. Weed Control Conf. 231-233 (1951).

<4200>
CHEMICAL NAME: Undecanoic acid
CHEMICAL COMMON NAME: Undecylenic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Broadleaf weeds; Grasses; Bean, snap (PHASEOLUS VULGARIS); Corn (ZEA MAYS); Gladiolus; Euonymus (EUONYMUS RADICANS); Orchid; Holly (ILEX sp.); Peach (PRUNUS PERSICA); Pine, loblolly (PINUS TAEDA); Gardenia (GARDENIA JASMINOIDES); Yew (TAXUS sp.); Carnation; Rose (ROSA sp.)
EXPERIMENTAL DOSE: 1.0%; 0.25% Nekal NS wetting agent; acid and triethanolamine salt
APPLICATION METHODS: Foliar between-row and preemergence sprays; 125 to 300 gal/A; Teejet #8015 nozzle; weeds sprayed to thorough wetness
EXPERIMENTAL CONDITIONS: Greenhouse/fiedl studies; controlled directional spraying of weeds avoiding crop plants except tomato (used as test plant with direct application)
EFFECTS: Killed weeds and other plants (e.g., tomato) directly sprayed but not crop plants next to treatments (postemergence); no effect on crops in preemergence applciations; equally effective on weed types
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<4201>
CHEMICAL NAME: Undecanoic acid, methyl ester
CHEMICAL COMMON NAME: Methyl undecylenate
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<4202>
CHEMICAL NAME: Undecanol
CHEMICAL COMMON NAME: N-undecylic aldehyde
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 3.2%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<4203>
CHEMICAL NAME: Undeceanamide, (2-methylpropyl)-
CHEMICAL COMMON NAME: Isobutyl undecylenamide
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings

<4203> CONT.
without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<4204>
CHEMICAL NAME: Uracil, 3-butyl-6-methyl-
PLANT: Crabgrass (DIGITARIA sp.); Sorghum (SORGHUM BICOLOR); Oat, wild (AVENA FATUA); Nutsedge (CYPERUS sp.); Mustard (BRASSICA sp.); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No effect on nutsedge with total or partial kill of remaining plants
COMMENTS: Substituted uracils are highly phytotoxic to wide variety of plants; compounds have low mammalian toxicity, and promise to become economically important herbicides
REFERENCE: Bucha, H.C., W.E. Cupery, J.E. Harrod, H.M. Loux, and L.M. Ellis, "Substituted Uracil Herbicides," Science 137:537-538 (1962).

<4205>
CHEMICAL NAME: Uramon
CHEMICAL COMMON NAME: Uramon
PLANT: Radish (RAPHANUS SATIVUS); Ryegrass, perennial (LOLIUM PERENNE); Bentgrass, black (AGROSTIS GIGANTEA); Plants; Redtop (AGROSTIS ALBA); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 50, 75, and 100 lb/1000 sq ft
APPLICATION METHODS: Added to soil
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: At 75 and 100 lb rates, effective weed control with reduced germination of test plants
COMMENTS: Several fertilizers and chemicals inhibited weed growth either by killing seeds or by killing seedlings shortly after germination; materials applied dry or as spray solutions and thoroughly mixed by cultivation or raking into upper 2 or 3 inches of soil; period of time after treatment before grass, radishes, alfalfa, or seedlings of tomato, cabbage, or other crops could be planted safely varied with different materials and amounts applied; sterilizing soils with fertilizers or chemicals appears very practical method of controlling weeds and fertilizing seedbeds in one operation; especially true of fertilizers which do not appreciably alter soil complex and which do not leave residual toxicity for long periods
REFERENCE: DeFrance, J.A., R.S. Bell, and T.E. Odland, "Killing Weed Seeds in the Grass Seedbed by the Use of Fertilizers and Chemicals," J. Am. Soc. Agron. 39:530-535 (1947).

<4206>
CHEMICAL NAME: Urea, ethanolamine-p-nitrobenzenesulfonyl-
CHEMICAL COMMON NAME: MON-814
PLANT: Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 1.12, 2.24 and 4.5 kg/ha
APPLICATION METHODS: Application on established sod with a CO(2) sprayer in 336 l./ha water with 0.7% Aerosol OT surfactant (sulfosuccinic acid)
EXPERIMENTAL CONDITIONS: Spring field experiment on 15 year old sod; sod fertilized before treatment; 1.5 X 9.1 m plots in randomized complete block design with 4 replicates
EFFECTS: Significant height reduction at all rates after 27 days but after 36 days only 4.5 kg/ha gave significant reduction; significant reduction in dry matter yield at all rates at 27 days more pronounced at the 2 highest rates; significant color change after 18 days only at highest rate
COMMENTS: Possible use in managing highway roadbanks; greenhouse studies determined chemicals for field tests
REFERENCE: Elkins, D.M. and D.L. Suttner, "Chemical Regulation of Grass Growth. I. Field and Greenhouse Studies with Tall Fescue," Agron. J. 66:487-491 (1974).

<4207>
CHEMICAL NAME: Urea, ethylenethio-
PLANT: Wheat (TRITICUM AESTIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: Tomato experiment--250, 500, 1000, and 2000 ppm; wheat experiment--6.25, 12.5, 25.0, 50.0, and 100 ppm
APPLICATION METHODS: Wheat experiment--50 ml of each solution added to soil; tomato experiment--potted plants sprayed to runoff
EXPERIMENTAL CONDITIONS: Wheat experiment--plants grown in sand, treatments begun when plants well established, 50 ml of each dilution added daily for 10 days; tomato experiment--plants grown in 4-in. clay pots, sprayed to runoff
EFFECTS: Not toxic
COMMENTS: Tomato protoplast studies also reported
REFERENCE: Ross, R.G. and R.A. Ludwig, "A Comparative Study of Fungitoxicity and Phytotoxicity in an Homologous Series of N-N-Alkylethylenethioureas," Can. J. Bot. 35:65-95 (1957).

<4208>
CHEMICAL NAME: Urea, hydroxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 30, 100, and 300 ug/ml
APPLICATION METHODS: Seed treatment
EXPERIMENTAL CONDITIONS: Seeds presoaked in test solutions for 4 hr; some seeds after drying placed in petri dishes containing test solution for 15 and 24 hr, others placed in petri dishes containing water for 15 hr; all seeds soaked in light at 26 C; percent germination recorded
EFFECTS: Test solution (15 hr)--60, 88, and 88%; test solution (24 hr)--90, 94, and 95%; water soak (15

<4208>
<4208> CONT.
hr)--70, 83, and 75%
COMMENTS: Germination percentages at 30, 100, and 300 ug/ml, respectively; water control (no presoak)--75% germination at 15 hr and 95% at 24 hr; 6-benzylaminopurine and/or gibberellic acid does not reverse toxicity of test compound
REFERENCE: Clifton, G., S.R. Bryant, and C.G. Skinner, "Inhibition of Seed Germination by Some N-(Substituted)-N'-Hydroxyureas," Life Sci. 7(2):993-1002 (1968).

<4209>
CHEMICAL NAME: Urea, N-(cyclohexyldithio)-N'-(2-fluorophenyl)-N-methyl-
CHEMICAL COMMON NAME: RE-17111
PLANT: Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.0, 2.0, and 3.0 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, or postemergence sprays; 80 gal/A at 40 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; soil--Caribon gravelly silt loam
EFFECTS: Effective weed control at highest rates in preemergence applications with no adverse effect on potatoes; early postemergence applications less effective
COMMENTS: Oryzalin, oryzalin plus metribuzin, and RE 17111 did acceptable job of controlling mustard, lambsquarters, bindweed, ladysthumb, and chickweed; in one test, trifluralin, EPTC, EL-161, oryzalin, or metribuzin did not control quackgrass
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in Potatoes With Several Pre-Plant Incorporated, Preemergence, and Early Post Emergence Herbicides," Proc. N.E. Weed Sci. Soc. 30:235-238 (1976).

<4210>
CHEMICAL NAME: Urea, N-(1,1-dimethylethyl)-N'-hydroxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 10, 30, and 100 ug/ml
APPLICATION METHODS: Seed treatment
EXPERIMENTAL CONDITIONS: Seeds presoaked in test solutions for 4 hr; some seeds after drying placed in Petri dishes containing test solution for 15 and 24 hr, others placed in Petri dishes containing only water for 15 and 24 hr; all seeds soaked in light at 26 C; percent germination recorded
EFFECTS: Test solution (15 hr)--7, 0, and 0%; test solution (24 hr)--48, 10, and 2%; water soak (15 hr)--70, 20, and 11%; water soak (24 hr)--85, 74, and 77%
COMMENTS: Germination percentages at 10, 30, and 100 ug/ml, respectively; water control (no presoak)--75% germination at 15 hr and 95% at 24 hr; 6-benzylaminopurine and/or gibberellic acid does not reverse toxicity of test compound
REFERENCE: Clifton, G., S.R. Bryant, and C.G. Skinner, "Inhibition of Seed Germination by Some N-(Substituted)-N'-Hydroxyureas," Life Sci. 7(2):993-1002 (1968).

<4211>
CHEMICAL NAME: Urea, N-(2-methylcyclohexyl)-N'-phenyl-
CHEMICAL COMMON NAME: Siduron
PLANT: Cane, wild (SORGHUM BICOLOR); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Field study; herbicide incorporated at 2-in. depth
EXPERIMENTAL CONDITIONS: Plots included natural infestation of wild cane control; better control of wild cane planted at 1-and 4-in. depth than in the natural infestation plot
EFFECTS: Natural infestation plot -- 20% wild cane control; control better in natural infestation plot than in plots where wild cane planted at 1-and 4-in. depths
COMMENTS: Herbicides more effective than cultivation, but combination gave best control of wild cane; trifluralin gave better control than vernolate and vernolate gave better control than DCPA; incorporation by rototilivator controlled wild cane better than rotary hoe incorporation
REFERENCE: Burnside, O.C., "Control of Wild Cane in Soybeans," Weed Sci. 16(1):18-22(1968).

<4212>
CHEMICAL NAME: Urea, N-(2-methylcyclohexyl)-N'-phenyl-
CHEMICAL COMMON NAME: Siduron
PLANT: Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 8.9 and 17.9 kg/ha
APPLICATION METHODS: WP formulation applied with a gauged hand pump compression sprayer; preemergence July application
EXPERIMENTAL CONDITIONS: Emory clay loam soil; 4 year experiment with fourth year used to determine recovery -- no herbicide application; randomized complete block design with 3 replications and a check; plots measured 0.9 by 4.8 m with 0.3-m border between plots; no border between replications; injury determined by sod loss and foliar damage; lowest rates of application halved, plots treated with high rates applied four times
EFFECTS: First year -- moderate to severe foliar injury and associated sod loss; second year -- moderate to severe foliar injury, extensive sod loss with some recovery late in year; third year -- severe foliar injury and sod loss, sod loss recovery late in year; fourth year -- no persisting foliage injury or sod loss
COMMENTS: In general, herbicide effectiveness increases with consecutive annual applications
REFERENCE: Callahan, L.M., "Phytotoxicity of Herbicides to a Tifgreen Bermudagrass Green," Weed Sci. 24(1):92-98(1976).

<4213>
CHEMICAL NAME: Urea, N-(2-methylcyclohexyl)-N'-phenyl-
CHEMICAL COMMON NAME: Siduron
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect noted
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4214>
CHEMICAL NAME: Urea, N-(2-methylcyclohexyl)-N'-phenyl-
CHEMICAL COMMON NAME: Siduron
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 18.0 lb/A; 4.57% G
APPLICATION METHODS: Broadcast (G) with spreader; preemergence spray, 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; mature Kentucky bluegrass lawn; soils-sandy and loam; crabgrass seed sown on lawn just prior to applications
EFFECTS: Slight control of crabgrass
COMMENTS: A-820, CG-10832, PPG-139 and RP-17623 gave good crabgrass control; April versus May application of several of preemergence types show that specific guidelines are needed to obtain efficient crabgrass control; goosegrass control fair to good for several chemicals, but all materials considered poor to unsatisfactory
REFERENCE: Engel, R.E., C.W. Bussey, and P. Catron, "Crabgrass and Goosegrass Control in Turfgrass with Several Preemerge Herbicides," Proc. Northeast. Weed Sci. Soc. 29:369-371 (1975).

<4215>
CHEMICAL NAME: Urea, N-(2-methylcyclohexyl)-N'-phenyl-
CHEMICAL COMMON NAME: Siduron
PLANT: Bermudagrass (CYNODON sp.); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.0 and 5.0 ppm
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Environmental chamber; photoperiod--14 hr; light--15 and 29 kilolux; temperatures--30/20 C and 22/15 C (day/night); container culture with sand; evaluation time--8 days
EFFECTS: Reduced growth of bermudagrass but little or no effect on bluegrass
COMMENTS: Bermudagrass susceptible to siduron at all temperatures and light intensities; shoot growth reduced more than root growth
REFERENCE: De Mur, A.R., V.B. Youngner, and J.R. Goodin, "Siduron Toxicity to Turfgrass as Affected by Several Climatic Factors," Agron. J. 65(1):730-732 (1973).

<4216>
CHEMICAL NAME: Urea, N-(2-methylcyclohexyl)-N'-phenyl-
CHEMICAL COMMON NAME: Siduron
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, creeping red (FESTUCA RUBRA); Crabgrass (DIGITARIA ISCHAEMUM); Goosegrass (ELEUSINE INDICA)
EXPERIMENTAL DOSE: 6, 12, and 15 lb/A
APPLICATION METHODS: Preemergence spray and granular applications; spray applied at 86 gpa rate with CO(2) spray and granules applied by hand; plots in test 1 receiving 6 lb/A got a second 6 lb/A treatment June 4
EXPERIMENTAL CONDITIONS: Test 1--crabgrass control test on turf grasses, 4 x 5 ft plots, 3 replications, ratings on August 22, herbicides applied May 1; test 2--goosegrass control study in bluegrass, May 20 treatment and September 23 ratings, 5 x 5 plots, 6 replications
EFFECTS: Test 1--83 and 88% crabgrass control at spray treatments of 6 and 12 lb/A, respectively, 60% crabgrass control with 12 lb/A granular treatment, minor turfgrass injury; test 2--63% goosegrass control with spray treatment of 15 lb/A
COMMENTS: Fescue, bentgrass, and bluegrass tabulated as turfgrass in test 1
REFERENCE: Coville, C.M. and J.A. Jagschitz, "Herbicides for Preemergence Crabgrass and Goosegrass Control in Turfgrass--1975," Proc. Northeast. Weed Sci. Soc. 30:367-371 (1976).

<4217>
CHEMICAL NAME: Urea, N-(2-methylcyclohexyl)-N'-phenyl-
CHEMICAL COMMON NAME: Siduron
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 12.0 and 18.0 lb/A; G and WP
APPLICATION METHODS: Preemergence broadcast spreader (G) and spray (WP); 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; established turf with seeding of crabgrass prior to herbicide applications
EFFECTS: Moderate control of crabgrass with no adverse effect on bluegrass
COMMENTS: A-820, CGA-10832, and RP-17623 experimental herbicides useful new preemergence herbicides in comparison with commercially available herbicides; two new aniline herbicides have some advantages
REFERENCE: Engel, R.E., C.W. Bussey, and R.D. Ilnicki, "Control of Crabgrass DIGITARIA Species and Goosegrass ELEUSINE INDICA in Turf with Experimental Preemergence Herbicides," Proc. Northeast. Weed Soc. 27:324-330 (1973).

<4218>
<4218>
CHEMICAL NAME: Urea, N-(3,4-dichlorophenyl)-N'-methyl-
CHEMICAL COMMON NAME: DMU
PLANT: Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 0.12, 0.25, 0.50, and 1.00 lb/A; 0.5% surfactant
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: Effective control at 0.5 and 1.0 lb rates
COMMENTS: Of five phenylureas, diuron was most active as foliar spray on young crabgrass; liquid and wettable powder formulations performed equally well; addition of surfactants to aqueons suspensions of diuron greatly enhanced herbicidal activity in greenhouse and field experiments
REFERENCE: McWhorter, C.G. and T.J. Sheets, "The Effectiveness of Five Phenylureas as Foliar Sprays and the Influence of Surfactants on Their Activity," Proc. Southern Weed Conf. 14:54-59 (1961).

<4219>
CHEMICAL NAME: Urea, N-(4-methylphenyl)-N'-(1-methyl-1-phenylethyl)-
CHEMICAL COMMON NAME: K-223
PLANT: Millet, sawa (PANICUM CRUSGALLI); Rice (ORYZA SATIVA); Spikerush (ELEOCHARIS PELLUCIDA); Umbrellaplant (CYPERUS DIFFORMIS); Flatsedge (CYPERUS SEROTINUS); Pimpernel, false (LINDERNIA PROCUMBENS); Pickerel weed (MONOCHORIA VAGINALIS); Redstem (Totala indica); Waterwort, American (ELATINE AMERICANA); Wheat (TRITICUM AESTIVUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX); Carrot (DAUCUS CAROTA); Buckwheat (FAGOPYRUM ESCULENTUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0 to 32.0 kg/ha; 0.03 to 2.6 X 10(-6) M
APPLICATION METHODS: Solution addition (seed germination); soil addition (submerged study); preplant incorporation (field crops); 50% and 80% WP and 7% G
EXPERIMENTAL CONDITIONS: Laboratory study (seed germination); field study; submerged patty-type pot culture; field crops; greenhouse study--pot culture
EFFECTS: Effective control of sedges at 3.0 lb/A (except flatsedge at 4.0 lb/A) with little or no effect on broadleafs or crop plants at rates up to 16.0 lb/A; moderate effect on millet seed germination
COMMENTS: K-223 selectively controlled slender spikerush, purple nutsedge, and annual cyperaceous weeds; practically nontoxic to most broadleaf weeds; selectivity between crops and grass weeds high
REFERENCE: Takematsu, T., M. Konnai, T. Akashiba, and N. Seki, "Selective Control of Cyperaceous Weeds with K-223," Weed Sci. 23(1):15-19 (1975).

<4220>
CHEMICAL NAME: Urea, N-(4-methylphenyl)-N'-(1-methyl-1-phenylethyl)-
CHEMICAL COMMON NAME: K-223
PLANT: Grasses; Broadleaf weeds; Nutsedge, purple (CYPERUS ROTUNDUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 6, 8, 10 and 12 kg/ha
APPLICATION METHODS: Formulation--80% WP; preplanting incorporated; K-223 singly applied only in wet season
EXPERIMENTAL CONDITIONS: Clay loam (pH 5.8, organic matter 2.6%); dry and wet season treatments; randomized block design with 3 replications; 3 by 5 sq. m plots; nitrogen applied as ammonium sulphate at rate of 120 kg/ha
EFFECTS: No rice toxicity; poor grass and broadleaf weed control; 6 and 8 kg/ha, fair nutsedge control; 10 and 12 kg/ha, excellent control
COMMENTS: Herbicide combinaticns also tested
REFERENCE: Okafor, L.I. and S.K. De Datta, "Chemical Control of Perennial Nutsedge (CYPERUS ROTUNDUS) in Tropical Upland Rice," Weed. Res. 16(1):1-5 (1976).

<4221>
CHEMICAL NAME: Urea, N-[5-(1,1-dimethylethyl)-1,3,4-thiadiazol-2-yl]-N,N'-dimethyl-
CHEMICAL COMMON NAME: Tebuthiuron
PLANT: Sorghum (SORGHUM BICOLOR); Pea, cow- (VIGNA UNQUICULATA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 2.8, 5.6, 11.2, 44.8 and 179 ug/plant
APPLICATION METHODS: Formulation--95% technical; herbicide solution in water containing 0.5% (V/V) X-77 as surfactant was applied on plants
EXPERIMENTAL CONDITIONS: Cowpea plants 10 to 12 days old when treated and sorghum plants were 25 to 28 days old; cowpea leaves treated by depositing 0.1 ml herbicide solution on upper surface, 0.1 ml deposited in partially expanded second true leaf of sorghum; 0.1 ml applied to hypocotyl of cowpea in other tests; germination effects determined by soaking seeds in 10(-7), 10(-6), 10(-5), 10(-4) and 10(-3) M aqueous solutions for 2, 4 and 8 hours, after treatment, seeds washed with 35 ml distilled water--effects recorded for wheat as well as other plants
EFFECTS: Inhibition of cowpea growth (stem application) increased with rate, 80% or better was observed at 179 ug; sorghum growth also decreased with increasing rate, 70% or better at 179 ug; 8 hr exposure of sorghum and wheat had no significant effects on germination, cowpea germination inhibited; percent dead cowpea plants and desiccated sorghum plants also increased with rate
COMMENTS: Sorghum seedlings more sensitive than cowpea seedlings; basal hypocotyl applications to cowpea more effective than application to one unifoliolate leaf--suggestion that translocation is limited to nonliving tissue
REFERENCE: Baur, J.R. and R.W. Bovey, "Herbicidal Effects of Tebuthiuron and Glyphosate," Agron. J. 67:547-553 (1975).

<4222>
CHEMICAL NAME: Urea, N-[5-(1,1-dimethylethyl)-1,3,4-thiadiazol-2-yl]-N,N'-dimethyl-
CHEMICAL COMMON NAME: Tebuthiuron
PLANT: Weeds
EXPERIMENTAL DOSE: 6 and 12 lb/A
APPLICATION METHODS: Postemergence in 50 gpa water
EXPERIMENTAL CONDITIONS: Treatments applied May 4, control ratings in August
EFFECTS: Good weed control
COMMENTS: Leaching caused vegetation damage outside control area
REFERENCE: Chappell, W.E. and M.L. Link, "Soil Sterilants for Maintaining Electric Sub-stations," Proc. South Weed Sci. Soc. 30:330-331 (1977).

<4223>
CHEMICAL NAME: Urea, N-[5-(1,1-dimethylethyl)-1,3,4-thiadiazol-2-yl]-N,N'-dimethyl-
CHEMICAL COMMON NAME: Tebuthiuron
PLANT: Broadleaf weeds; Grasses; Sugarcane (SACCHARUM sp.); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 0.5 to 2.0 kg/ha; 80% WP
APPLICATION METHODS: Preemergence and postemergence sprays
EXPERIMENTAL CONDITIONS: Field study; locations in U.S., Brazil, Australia, and Philippines
EFFECTS: Effective weed control at 1.0 to 1.5 kg/ha in both applications except for CYPERUS sp. (Brazil) with no adverse effect on sugarcane
COMMENTS: Commercially acceptable control of broad spectrum of annual broadleaf and grassy weeds observed when 80% wettable powder formulation diluted and applied as spray either pre-emergence or early post-emergence to weeds in the 2-3 leaf stage
REFERENCE: Schwer, J.F., "Characteristics and Field Performance of a New Selective Herbicide for Weed Control in Sugarcane," Proc. 12th. Br. Weed Cont. Conf. 2:847-850 (1974).

<4224>
CHEMICAL NAME: Urea, N-[5-(1,1-dimethylethyl)-1,3,4-thiadiazol-2-yl]-N,N'-dimethyl-
CHEMICAL COMMON NAME: Tebuthiuron
PLANT: Sugarcane (SACCHARUM sp.); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 0.75, 1.0, and 2.0 lb/A
APPLICATION METHODS: Preemergence directed (1 and 2 lb/A) and postemergence (0.75 lb/A) sprays at 20 gpa water
EXPERIMENTAL CONDITIONS: Mid-May applications, ratings 8 weeks later
EFFECTS: Preemergence directed--no reported sugarcane injury, 80 to 95% weed control; postemergence--no reported sugarcane injury, 90% grass and 70% broadleaf weed control
COMMENTS: Emergence refers to weeds
REFERENCE: Scott, A.W., Jr. and S.A. Reeves, Jr., "Evaluation of Selected Pre and Postemergence Weed Control Treatments in Sugarcane," Proc. South. Weed Sci. Soc. 30:125-129 (1977).

<4225>
CHEMICAL NAME: Urea, N-[5-(1,1-dimethylethyl)-1,3,4-thiadiazol-2-yl]-N,N'-dimethyl-
CHEMICAL COMMON NAME: Tebuthiuron
PLANT: Fingergrass (CHLORIS sp.); Lantana (LANTANA CAMARA); Gopherapple (GEOBALANUS sp.); Mullein, common (VERBASCUM THAPSIS); Bouncingbet (SAPONARIA OFFICINALIS); Fescue (FESTUCA sp.); Blackberry (RUBUS sp.); Honeysuckle (LONICERA sp.); Purslane, sea- (TRIANTHEMA PORTULACASTRUM); Bermudagrass, common (CYNODON DACTYLON); Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 2.0 to 12.0 lb/A
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; varied locations in SE United States
EFFECTS: Effective weed control on railroad and other rights-of-way at 2.0 to 8.0 lb/A with continuing control on repeat applications at lower rates
COMMENTS: Tebuthiuron provided full-season control of annual broadleaf and annual grassy weeds
REFERENCE: Lade, D.H., J.L. Barrentine, L.D. Dohner, C.D. Hobbs, J.A. Keaton, J.L. Pafford, J.C. Walker, and J.H. Watson, "Tebuthiuron, A New Herbicide for Total Vegetation Control," Proc. S. Weed Sci. Soc. 27:265-269 (1974).

<4226>
CHEMICAL NAME: Urea, N-[5-(1,1-dimethylethyl)-1,3,4-thiadiazol-2-yl]-N,N'-dimethyl-
CHEMICAL COMMON NAME: Tebuthiuron
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Nutsedge, purple (CYPERUS ROTUNDUS); Grasses; Broadleaf weeds; Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 0.8, 1.2, 1.5, and 3.0 kg/ha
APPLICATION METHODS: Preemergence spray; 80% WP formulation
EXPERIMENTAL CONDITIONS: Randomized block design; weed control field studies, 4 replications; laboratory sugarcane toxicity tests, 6 replications
EFFECTS: Test 1--moderate grass and broadleaf weed control but poor yellow nutsedge control at 0.8 and 1.2 kg/ha; test 3--moderate purple nutsedge and good broadleaf control at 3.0 kg/ha; mass of harvested sugarcane reduced at 3.0 kg/ha
COMMENTS: 3.0 kg/ha, twice the recommended dose; code name EL 103
REFERENCE: Iggo, G.A., "Results of Screening Pre-emergence Herbicides for Sugarcane," Proc. S. Afr. Sugar Technol. Assoc. 49:122-125(1975).

<4227>
<4227>
CHEMICAL NAME: Urea, N-butyl-N-methyl-N'-[4-1-methylethyl)phenyl]-
CHEMICAL COMMON NAME: LS 691299
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Broadleaf weeds; Grasses; Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 1 and 3 kg/ha
APPLICATION METHODS: Preemergence spray; 50% WP formulation
EXPERIMENTAL CONDITIONS: Field studies; randomized block design with 4 replications
EFFECTS: Effective weed control; no indication of sugarcane injury
REFERENCE: Iggo, G.A., "Results of Screening Pre-emergence Herbicides for Sugarcane," Proc. S. Afr. Sugar Technol. Assoc. 49:122-125(1975).

<4228>
CHEMICAL NAME: Urea, N-butyl-N'-(3,4-dichlorophenyl)-N-methyl-
CHEMICAL COMMON NAME: Neburon
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate overall weed control and control of barnyard grass but effective control of purslane and pigweed with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<4229>
CHEMICAL NAME: Urea, N-butyl-N'-(3,4-dichlorophenyl)-N-methyl-
CHEMICAL COMMON NAME: Neburon
PLANT: Pimpernel, common (ANAGALLIS ARVENSIS); Crunchweed (SINAPIS ARVENSIS); Pigweed (AMARANTHUS sp.); Bindweed, field (CONVOLVULUS ARVENSIS); Mustard, black (BRASSICA NIGRA)
EXPERIMENTAL DOSE: 1.6 and 3.2 kg/ha
APPLICATION METHODS: Postemergence application; 200 l./ha; trifluralin and chlorthal-dimethyl incorporated by rototilling; all others not incorporated
EXPERIMENTAL CONDITIONS: Field study; plots sprayed twice a year over a 4-year period; sprinkler irrigation; greenhouse study; residues determined by mustard bioassay
EFFECTS: Effective control of weeds at both rates except CONVOLVULUS; slight residual toxicity to mustard
COMMENTS: Phytotoxicity to weeds in decreasing order: diuron, bromacil, simazine, trifluralin, prometryne, neburon, fluometuron, pyrazon, diphenamid, chlorthal-dimethyl; persistence of herbicides in decreasing order: diuron, bromacil, simazine, neburon, fluometuron, trifluralin, prometryne; control produced by pyrazon improved with the number of applications, but that of diphenamid and chlorthal-dimethyl remained weak and short
REFERENCE: Horowitz, M., T. Blumenfeld, G. Herzlinger, and N. Hulin, "Effects of Repeated Applications of Ten Herbicides on Weed Population, Residue Accumulation and Nitrification," Weed Res. 14(2):97-109 (1974).

<4230>
CHEMICAL NAME: Urea, N-butyl-N'-(3,4-dichlorophenyl)-N-methyl-
CHEMICAL COMMON NAME: Neburon
PLANT: Bluegrass, annual (POA ANNUA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preplant solution soak
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Puyallup fine sandy loam; pH--5.8; temperature--approx 60 F
EFFECTS: Moderate control of bluegrass with no adverse effect on bentgrass
COMMENTS: Dacthal, betasan, dipropalin, trifluralin, and enide significantly controlled annual bluegrass for periods of 9 to 12 weeks; dacthal and betasan completely nonphytotoxic to mature turf
REFERENCE: Goss, R.L., "Preemergence Control of Annual Bluegrass (POA ANNUA L.)," J. Agron. 56(1):479-481 (1964).

<4231>
CHEMICAL NAME: Urea, N-butyl-N'-(3,4-dichlorophenyl)-N-methyl-
CHEMICAL COMMON NAME: Neburon
PLANT: Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 0.12, 0.25, 0.50, and 1.00 lb/A; 0.5% surfactant
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: Moderate control at all rates
COMMENTS: Of five phenylureas, diuron was most active as foliar spray on young crabgrass; liquid and wettable powder formulations performed equally well; addition of surfactants to aqueous suspensions of diuron greatly enhanced herbicidal activity in greenhouse and field experiments
REFERENCE: McWhorter, C.G. and T.J. Sheets, "The Effectiveness of Five Phenylureas as Foliar Sprays and the Influence of Surfactants on Their Activity," Proc. Southern Weed Conf. 14:54-59 (1961).

<4232>
CHEMICAL NAME: Urea, N-butyl-N'-(3,4-dichlorophenyl)-N-methyl-
CHEMICAL COMMON NAME: Neburon
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants; Pepper, pimento
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Effective weed control with no adverse effect on tomato and pimento
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<4233>
CHEMICAL NAME: Urea, N-butyl-N'-(3,4-dichlorophenyl)-N-methyl-
CHEMICAL COMMON NAME: Kloben
PLANT: Grasses; Broadleaf weeds; Maple, amur (ACER GINNALA); Euonymus, Japanese (EUONYMUS FORTUNEI); Goldenbells (FORSYTHIA INTERMEDIA); Juniper, common (JUNIPERUS COMMUNIS); Pine, red (PINUS RESINOSA); Oak, pin (QUERCUS PALUSTRIS); Rose (ROSA WICHURAIANA); Lilac (SYRINGA VULGARIS); Yew, upright (TAXUS CUSPIDATA); Periwinkle, common (VINCA MINOR)
EXPERIMENTAL DOSE: 3.0 and 6.0 lb/A
APPLICATION METHODS: Postplanting spray; 30 gal/A at 30 lb/sq in
EXPERIMENTAL CONDITIONS: Field study; soil--Stoy silt loam; application one week after planting in winter; time period--1961 and 1962
EFFECTS: Effective weed control at 3.0 lb/A with slight or no damage of woody plants except ACER, QUERCUS, ROSA, and VINCA (moderate damage)
COMMENTS: Effective weed control, lasting until June of following year obtained with atrazine, CIPC, kloben, simazine, lorox, ametryne, and prometryne; atrazine, kloben and simazine gave nearly 100% control; atrazine caused plant injury with more dead plants in treated plots than in control planting; simazine and kloben safer materials
REFERENCE: Sherwood, L.V. and H.R. Kemmerer, "The Influence of Winter Applied Preemergence Herbicides on Weed Growth among Woody Ornamental Plants," Am. Soc. Hort. Sci. 85:657-662 (1964).

<4234>
CHEMICAL NAME: Urea, N-butyl-N'-hydroxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 30, 100, and 300 ug/ml
APPLICATION METHODS: Seed treatment
EXPERIMENTAL CONDITIONS: Seeds presoaked in test solutions for 4 hr; some seeds after drying placed in petri dishes containing test solution for 15 and 24 hr, others placed in petri dishes containing water for 15 hr; all seeds soaked in light at 26 C; percent germination recorded
EFFECTS: Test solution (15 hr)--33, 9, and 0%; test solution (24 hr)--97, 92, and 1%; water soak (15 hr)--70, 87, and 66%
COMMENTS: Germination percentages at 30, 100, and 300 ug/ml, respectively; water control (no presoak)--75% germination at 15 hr and 95% at 24 hr; 6-benzylaminopurine and/or gibberellic acid does not reverse toxicity of test compound
REFERENCE: Clifton, G., S.R. Bryant, and C.G. Skinner, "Inhibition of Seed Germination by Some N-(Substituted)-N'-Hydroxyureas," Life Sci. 7(2):993-1002 (1968).

<4235>
CHEMICAL NAME: Urea, N-cyclohexyl-N'-hydroxy
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 30, 100, and 300 ug/ml
APPLICATION METHODS: Seed treatment
EXPERIMENTAL CONDITIONS: Seeds presoaked in test solutions for 4 hr; some seeds after drying placed in petri dishes containing test solution for 15 and 24 hr, others placed in petri dishes containing water for 15 hr; all seeds soaked in light at 26 C; percent germination recorded
EFFECTS: Test solution (15 hr)--11, 2, and 0%; test solution (24 hr)--65, 15, and 0%; water soak (15 hr)--79, 63, and 40%
COMMENTS: Germination percentages at 30, 100, and 300 ug/ml, respectively; water control (no presoak)--75% germination at 15 hr and 95% at 24 hr; 6-benzylaminopurine and/or gibberellic acid does not reverse toxicity of test compound
REFERENCE: Clifton, G., S.R. Bryant, and C.G. Skinner, "Inhibition of Seed Germination by Some N-(Substituted)-N'-Hydroxyureas," Life Sci. 7(2):993-1002 (1968).

<4236>
CHEMICAL NAME: Urea, N-ethyl-N-nitroso-
CHEMICAL COMMON NAME: NEU
EXPERIMENTAL DOSE: 0.005 to 0.04% for 24 hr
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Greenhouse study; treated sunflowers studied for up to 5 generations; mutations induced with NEU in conjunction with (or without) gamma irradiation
COMMENTS: NEU stimulated rooting process, formation of calathides, and seed productivity in scions irradiated with gamma-rays at dose of 2 kR and had depressive effect on development of scions previously irradiated with 5 kR dose
REFERENCE: Lyashchenko, I.F. and I.I. Ulitcheva, "The Effect of Physical and Chemical Mutagens of Sunflower," Genetika 7(8):50-58 (1971). (UDC 575.23:633.853.78)

<4237>
<4237>
CHEMICAL NAME: Urea, N-ethyl-N'-hydroxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 30, 100, and 300 ug/ml
APPLICATION METHODS: Seed treatment
EXPERIMENTAL CONDITIONS: Seeds presoaked in test solutions for 4 hr; some seeds after drying placed in petri dishes containing test solution for 15 and 24 hr, others placed in petri dishes containing water for 15 hr; all seeds soaked in light at 26 C; percent germination recorded
EFFECTS: Test solution (15 hr)--65, 63, and 0%; test solution (24 hr)--86, 89, and 5%; water soak (15 hr)--63, 54, and 65%
COMMENTS: Germination percentages at 30, 100, and 300 ug/ml, respectively; water control (no presoak)--75% germination at 15 hr and 95% at 24 hr; 6-benzylaminopurine and/or gibberellic acid does not reverse toxicity of test compound
REFERENCE: Clifton, G., S.R. Bryant, and C.G. Skinner, "Inhibition of Seed Germination by Some N-(Substituted)-N'-Hydroxyureas," Life Sci. 7(2):993-1002 (1968).

<4238>
CHEMICAL NAME: Urea, N-ethylethylenethio-
PLANT: Wheat (TRITICUM AESTIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: Wheat experiment--6.25, 12.5, 25.0, 50.0, and 100 ppm; tomato experiments--(1) 30 ppm, (2) 250, 500, 500, 1000, and 2000 ppm
APPLICATION METHODS: Wheat experiment--50 ml of each dilution added to soil; tomato experiments--(1) excised tops placed in 30 ppm solution, (2) potted plants sprayed to runoff
EXPERIMENTAL CONDITIONS: Wheat experiment--plants grown in sand, treatments begun when plants well established, 50 ml of each dilution added daily for 10 days; tomato experiments--(1) excised 6 to 8 in. high tops allowed to take up 30 ppm solution, observations and growth measurements made, (2) plants grown in pots, sprayed to runoff
EFFECTS: Wheat experiments--growth reduction and leaf distortion increased with concentration; tomato experiments--(1) growth reduction, distortion of new growth, and chlorosis of older foliage, (2) leaf tip injury at all doses
COMMENTS: Tomato protoplast studies also reported
REFERENCE: Ross, R.G. and R.A. Ludwig, "A Comparative Study of Fungitoxicity and Phytotoxicity in an Homologous Series of N-N-Alkylethylenethioureas," Can. J. Bot. 35:65-95 (1957).

<4239>
CHEMICAL NAME: Urea, N-hexyl-N'-hydroxy-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 30, 100, and 300 ug/ml
APPLICATION METHODS: Seed treatment
EXPERIMENTAL CONDITIONS: Seeds presoaked in test solutions for 4 hr; some seeds after drying placed in petri dishes containing test solution for 15 and 24 hr, others placed in petri dishes containing water for 15 hr; all seeds soaked in light at 26 C; percent germination recorded
EFFECTS: Test solution (15 hr)--44, 6, and 0%; test solution (24 hr)--89, 38, and 0%; water soak (15 hr)--80, 68, and 61%
COMMENTS: Germination percentages at 30, 100, and 300 ug/ml, respectively; water control (no presoak)--75% germination at 15 hr and 95% at 24 hr; 6-benzylaminopurine and/or gibberellic acid does not reverse toxicity of test compound
REFERENCE: Clifton, G., S.R. Bryant, and C.G. Skinner, "Inhibition of Seed Germination by Some N-(Substituted)-N'-Hydroxyureas," Life Sci. 7(2):993-1002 (1968).

<4240>
CHEMICAL NAME: Urea, N-hydroxy-N'-methyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 30, 100, and 300 ug/ml
APPLICATION METHODS: Seed treatment
EXPERIMENTAL CONDITIONS: Seeds presoaked in test solutions for 4 hr; some seeds after drying placed in petri dishes containing test solution for 15 and 24 hr, others placed in petri dishes containing water for 15 hr; all seeds soaked in light at 26 C; percent germination recorded
EFFECTS: Test solution (15 hr)--61, 59, and 69%; test solution (24 hr)--92, 89, and 91%; water soak (15 hr)--65, 72, and 80%
COMMENTS: Germination percentages at 30, 100, and 300 ug/ml, respectively; water control (no presoak)--75% germination at 15 hr and 95% at 24 hr; 6-benzylaminopurine and/or gibberellic acid does not reverse toxicity of test compound
REFERENCE: Clifton, G., S.R. Bryant, and C.G. Skinner, "Inhibition of Seed Germination by Some N-(Substituted)-N'-Hydroxyureas," Life Sci. 7(2):993-1002 (1968).

<4241>
CHEMICAL NAME: Urea, N-hydroxy-N'-naphthalenyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 30, 100, and 300 ug/ml
APPLICATION METHODS: Seed treatment
EXPERIMENTAL CONDITIONS: Seeds presoaked in test solutions for 4 hr; some seeds after drying placed in petri dishes containing test solution for 15 and 24 hr, others placed in petri dishes containing water for 15 hr; all seeds soaked in light at 26 C; percent germination recorded
EFFECTS: Test solution (15 hr)--70, 40, and 34%; test solution (24 hr)--93, 93, and 89%; water soak (15 hr)--76, 71, and 77%
COMMENTS: Germination percentages at 30, 100, and 300 ug/ml, respectively; water control (no presoak)--75% germination at 15 hr and 95% at 24 hr; 6-benzylaminopurine and/or gibberellic acid does not reverse toxicity of test compound
REFERENCE: Clifton, G., S.R. Bryant, and C.G. Skinner, "Inhibition of Seed Germination by Some N-(Substituted)-N'-Hydroxyureas," Life Sci. 7(2):993-1002 (1968).

<4242>
CHEMICAL NAME: Urea, N-hydroxy-N'-phenyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 30, 100, and 300 ug/ml
APPLICATION METHODS: Seed treatment
EXPERIMENTAL CONDITIONS: Seeds presoaked in test solutions for 4 hr; some seeds after drying placed in petri dishes containing test solution for 15 and 24 hr, others placed in petri dishes containing water for 15 hr; all seeds soaked in light at 26 C; percent germination recorded
EFFECTS: Test solution (15 hr)--35, 1, and 0%; test solution (24 hr)--94, 83, and 23%; water soak (15 hr)--71, 69, and 65%
COMMENTS: Germination percentages at 30, 100, and 300 ug/ml, respectively; water control (no presoak)--75% germination at 15 hr and 95% at 24 hr; 6-benzylaminopurine and/or gibberellic acid does not reverse toxicity of test compound
REFERENCE: Clifton, G., S.R. Bryant, and C.G. Skinner, "Inhibition of Seed Germination by Some N-(Substituted)-N'-Hydroxyureas," Life Sci. 7(2):993-1002 (1968).

<4243>
CHEMICAL NAME: Urea, N-hydroxy-N'-propyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 30, 100, and 300 ug/ml
APPLICATION METHODS: Seed treatment
EXPERIMENTAL CONDITIONS: Seeds presoaked in test solutions for 4 hr; some seeds after drying placed in petri dishes containing test solution for 15 and 24 hr, others placed in petri dishes containing water for 15 hr; all seeds soaked in light at 26 C; percent germination recorded
EFFECTS: Test solution (15 hr)--29, 39, and 0%; test solution (24 hr)--87, 90, and 1%; water soak (15 hr)--52, 64, and 57%
COMMENTS: Germination percentages at 30, 100, and 300 ug/ml, respectively; water control (no presoak)--75% germination at 15 hr and 95% at 24 hr; 6-benzylaminopurine and/or gibberellic acid does not reverse toxicity of test compound
REFERENCE: Clifton, G., S.R. Bryant, and C.G. Skinner, "Inhibition of Seed Germination by Some N-(Substituted)-N'-Hydroxyureas," Life Sci. 7(2):993-1002 (1968).

<4244>
CHEMICAL NAME: Urea, N-hydroxy-N'-2-propenyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 30, 100, and 300 ug/ml
APPLICATION METHODS: Seed treatment
EXPERIMENTAL CONDITIONS: Seeds presoaked in test solutions for 4 hr; some seeds after drying placed in petri dishes containing test solution for 15 and 24 hr, others placed in petri dishes containing water for 15 hr; all seeds soaked in light at 26 C; percent germination recorded
EFFECTS: Test solution (15 hr)--67, 51, and 3%; test solution (24 hr)--96, 96, and 27%; water soak (15 hr)--62, 70, and 66%
COMMENTS: Germination percentages at 30, 100, and 300 ug/ml, respectively; water control (no presoak)--75% germination at 15 hr and 95% at 24 hr; 6-benzylaminopurine and/or gibberellic acid does not reverse toxicity of test compound
REFERENCE: Clifton, G., S.R. Bryant, and C.G. Skinner, "Inhibition of Seed Germination by Some N-(Substituted)-N'-Hydroxyureas," Life Sci. 7(2):993-1002 (1968).

<4245>
CHEMICAL NAME: Urea, N-methyl-N-nitroso-
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1.25 mM
APPLICATION METHODS: Immersion in test solutions for 3 hr
EXPERIMENTAL CONDITIONS: Laboratory soak followed by planting in field plots
EFFECTS: Growth reduction; culm lesions, and chlorophyll point mutations
COMMENTS: Susceptibility of initial cells of apical ear to action of NMH much lower than susceptibility of initial cells of first first-order ear or second first-order ear; showed lower susceptibility to somatic damages and in much lower frequency of chlorophyll point mutations; growth reduction and lesions of lower culms
REFERENCE: Maluszynski, M. and T. Sodkiewicz, "Different Frequencies of Point Mutations in Barley Ears After Treatment With N-nitroso-N-methylurea," Bull. L'Academie Polonaise des Sci. 24(11):647-653 (1976).

<4246>
CHEMICAL NAME: Urea, N-n-butylethylenethio-
PLANT: Wheat (TRITICUM AESTIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: Tomato experiment--250, 500, 1000, and 2000 ppm; wheat experiment--6.25, 12.5, 25.0, 50.0, and 100 ppm
APPLICATION METHODS: Wheat experiment--50 ml of each solution added to soil; tomato experiment--potted plants sprayed to runoff
EXPERIMENTAL CONDITIONS: Wheat experiment--plants grown in sand, treatments begun when plants well established, 50 ml of each dilution added daily for 10 days; tomato experiment--plants grown in 4-in clay pots, sprayed to runoff
EFFECTS: Wheat experiment--growth reduction and leaf distortion increasing with concentration; tomato experiment--marginal chlorosis and necrosis, higher doses (above 250 ppm) injured foliage appearing after spraying
COMMENTS: Tomato protoplast studies also reported
REFERENCE: Ross, R.G. and R.A. Ludwig, "A Comparative Study of Fungitoxicity and Phytotoxicity in an Homologous Series of N-N-Alkylethylenethioureas," Can. J. Bot. 35:65-95 (1957).

<4247>
<4247>
CHEMICAL NAME: Urea, N-n-decylethylenethio-
PLANT: Wheat (TRITICUM AESTIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: Tomato experiment--250, 500, 1000, 2000 ppm; wheat experiment--6.25, 12.5, 25.0, 50.0, and 100 ppm
APPLICATION METHODS: Wheat experiment--50 ml of each solution added to soil; tomato experiment--potted plants sprayed to runoff
EXPERIMENTAL CONDITIONS: Wheat experiment--plants grown in sand, treatments begun when plants well established, 50 ml of each dilution added daily for 10 days; tomato experiment--plants grown in 4-in clay pots, sprayed to runoff
EFFECTS: Wheat--no apparent toxicity; tomato--necrotic leaf flecking and marginal chlorosis, foliage injured was that present at time of exposure
COMMENTS: Tomato protoplast studies also reported
REFERENCE: Ross, R.G. and R.A. Ludwig, "A Comparative Study of Fungitoxicity and Phytotoxicity in an Homologous Series of N-N-Alkylethylenethioureas," Can. J. Bot. 35:65-95 (1957).

<4248>
CHEMICAL NAME: Urea, N-n-dodecylethylenethio-
PLANT: Wheat (TRITICUM AESTIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: Tomato experiment--250, 500, 1000, 2000 ppm; wheat experiment--6.25, 12.5, 25.0, 50.0, and 100 ppm
APPLICATION METHODS: Wheat experiment--50 ml of each solution added to soil; tomato experiment--potted plants sprayed to runoff
EXPERIMENTAL CONDITIONS: Wheat experiment--plants grown in sand, treatments begun when plants well established, 50 ml of each dilution added daily for 10 days; tomato experiment--plants grown in 4-in clay pots, sprayed to runoff
EFFECTS: Wheat--no apparent toxicity; tomato--necrotic leaf flecking and marginal chlorosis, foliage injured was that present at time of exposure
COMMENTS: Tomato protoplast studies also reported
REFERENCE: Ross, R.G. and R.A. Ludwig, "A Comparative Study of Fungitoxicity and Phytotoxicity in an Homologous Series of N-N-Alkylethylenethioureas," Can. J. Bot. 35:65-95 (1957).

<4249>
CHEMICAL NAME: Urea, N-n-heptylethylenethio-
PLANT: Wheat (TRITICUM AESTIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: Tomato experiment--250, 500, 1000, and 2000 ppm; wheat experiment--6.25, 12.5, 25.0, 50.0, and 100 ppm
APPLICATION METHODS: Wheat experiment--50 ml of each solution added to soil; tomato experiment--potted plants sprayed to runoff
EXPERIMENTAL CONDITIONS: Wheat experiment--plants grown in sand, treatments begun when plants well established, 50 ml of each dilution added daily for 10 days; tomato experiment--plants grown in 4-in. clay pots, sprayed to runoff
EFFECTS: Wheat--growth reduction and foliage injury at 25, 50, and 100 ppm; tomato--marginal chlorosis and necrosis at 1000 and 2000 ppm, no apparent injury at lower doses
COMMENTS: Tomato protoplast studies also reported
REFERENCE: Ross, R.G. and R.A. Ludwig, "A Comparative Study of Fungitoxicity and Phytotoxicity in an Homologous Series of N-N-Alkylethylenethioureas," Can. J. Bot. 35:65-95 (1957).

<4250>
CHEMICAL NAME: Urea, N-n-hexylethylenethio-
PLANT: Wheat (TRITICUM AESTIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: Tomato experiment--250, 500, 1000, and 2000 ppm; wheat experiment--6.25, 12.5, 25.0, 50.0, and 100 ppm
APPLICATION METHODS: Wheat experiment--50 ml of each solution added to soil; tomato experiment--potted plants sprayed to runoff
EXPERIMENTAL CONDITIONS: Wheat experiment--plants grown in sand, treatments begun when plants well established, 50 ml of each dilution added daily for 10 days; tomato experiment--plants grown in 4-in. clay pots, sprayed to runoff
EFFECTS: Wheat experiment--growth reduction and leaf distortion, more evident at 50 and 100 ppm; tomato experiment--marginal necrosis and chlorosis at 1000 and 2000 ppm, no injury at lower doses
COMMENTS: Tomato protoplast studies also reported
REFERENCE: Ross, R.G. and R.A. Ludwig, "A Comparative Study of Fungitoxicity and Phytotoxicity in an Homologous Series of N-N-Alkylethylenethioureas," Can. J. Bot. 35:65-95 (1957).

<4251>
CHEMICAL NAME: Urea, N-n-nonylethylenethio-
PLANT: Wheat (TRITICUM AESTIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: Tomato experiment--250, 500, 1000, and 2000 ppm; wheat experiment--6.25, 12.5, 25.0, 50.0, and 100 ppm
APPLICATION METHODS: Wheat experiment--50 ml of each solution added to soil; tomato experiment--potted plants sprayed to runoff
EXPERIMENTAL CONDITIONS: Wheat experiment--plants grown in sand, treatments begun when plants well established, 50 ml of each dilution added daily for 10 days; tomato experiment--plants grown in 4-in. clay pots, sprayed to runoff
EFFECTS: Wheat--no apparent toxicity; tomato--necrotic leaf flecking and marginal chlorosis, foliage injured was that present at time of exposure
COMMENTS: Tomato protoplast studies also reported
REFERENCE: Ross, R.G. and R.A. Ludwig, "A Comparative Study of Fungitoxicity and Phytotoxicity in an Homologous Series of N-N-Alkylethylenethioureas," Can. J. Bot. 35:65-95 (1957).

<4252>
CHEMICAL NAME: Urea, N-n-octylethylenethio-
PLANT: Wheat (TRITICUM AESTIVUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: Wheat experiment--6.25, 12.5, 25.0, 50.0, and 100 ppm; tomato experiments--(1) 30 ppm, (2) 250, 500, 1000, and 2000 ppm
APPLICATION METHODS: Wheat experiment--50 ml of each dilution added to soil; tomato experiments--(1) excised tops placed in 30 ppm solution, (2) potted plants sprayed to runoff
EXPERIMENTAL CONDITIONS: Wheat experiment--plants grown in sand, treatments begun when plants well established, 50 ml of each dilution added daily for 10 days; tomato experiments--(1) excised 6 to 8 in. high tops allowed to take up 30 ppm solution, observations and growth measurements made, (2) plants grown in pots, sprayed to runoff
EFFECTS: Wheat experiment--minor growth reduction of 100 ppm; tomato experiments--(1) growth reduction, (2) scattered necrotic leaf flecting, foliage injured was that present at time of exposure
COMMENTS: Tomato protoplast studies also reported
REFERENCE: Ross, R.G. and R.A. Ludwig, "A Comparative Study of Fungitoxicity and Phytotoxicity in an Homologous Series of N-N-Alkylethylenethioureas," Can. J. Bot. 35:65-95 (1957).

<4253>
CHEMICAL NAME: Urea, N-2-benzothiazolyl-N,N'-dimethyl-
CHEMICAL COMMON NAME: Methabenzthiazuron
PLANT: Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1.0 to 5.0 ppm
APPLICATION METHODS: Addition of solutions to vermiculite contraining yound potato plants or to grain seed
EXPERIMENTAL CONDITIONS: Greenhouse and environmental chamber studies; temperature--18 to 22 C; 70-75% RH; varied light conditions
EFFECTS: Biochemical alteration
COMMENTS: Changes observed in response to herbicidal treatment largely consequence of temporary lowered concentration of reducing sugars caused by partial inhibition of photosynthesis; herbicidal treatment led to strongly enhanced nitrate reductase activity, accompanied by higher levels of nitrate, soluble amino acids, and soluble protein
REFERENCE: Fedtke, C., "Influence of Photosynthesis-Inhibiting Herbicides on the Regulation of Crop Plant Metabolism," Pest. Biochem. & Physiol. 2:312-323 (1971).

<4254>
CHEMICAL NAME: Urea, N-2-benzothiazolyl-N,N'-dimethyl-
CHEMICAL COMMON NAME: Methabenzthiazuron
PLANT: Capewood (ARCTOTHECA CALENDULA); Oat (AVENA SATIVA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.28 and 0.56 kg/ha
APPLICATION METHODS: Postemergence spray; 112 l./ha
EXPERIMENTAL CONDITIONS: Field study; time period-- 1966-1970; 5 locations in Australia
EFFECTS: Effective control of capeweed at 0.56 kg/ha with no adverse effect on crop yields (one year only)
COMMENTS: Most satisfactory herbicides tested for control of capeweed were bromoxynil, linuron, diquat and prometryne; in one year tested, methabenzthiazuron effective
REFERENCE: Reeves, T.G. and J.M. Lumb, "Selective Chemical Control of Capeweed in Wheat," Aust. J. Exp. Agric. Anim. Husb. 12:60-64 (1972).

<4255>
CHEMICAL NAME: Urea, N-2-benzothiazolyl-N,N'-dimethyl-
CHEMICAL COMMON NAME: Methabenzthiazuron
PLANT: Oat, wild (AVENA FATUA); Foxtail, slender (ALOPECURUS MYOSUROIDES); Bluegrass, annual (POA ANNUA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Campion (MELANDRIUM ALBUM); Bindweed, black (POLYGONUM CONVOLVULUS); Ladysthumb (POLYGONUM PERSICARIA); Chamomile, wild (MATRICARIA CHAMOMILLA); Galinsoga (GALINSOGA PARVIFLORA); Chickweed, common (STELLARIA MEDIA); Plantain, hoary (PLANTAGO MEDIA); Sowthistle, perennial (SONCHUS ARVENSIS); Nettle, stinging (URTICA URENS); Lamb's-quarters (CHENOPODIUM ALBUM); Cress, garden (LEPIDIUM SATIVUM); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE); Oat (AVENA SATIVA); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, 1.5, 2.0, 3.0, 4.0, and 6.0 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays using 1000 l./ha water
EXPERIMENTAL CONDITIONS: Greenhouse test; comparisons made with PH 40-51 and metoxuron; postemergence weed exposure concentrations--0.25, 0.5, and 1.0 kg/ha; postemergence cereal exposure concentrations--1,2, and 4 kg/ha; preemergence exposure concentrations--1.5, 3.0, and 6.0 kg/ha
EFFECTS: Postemergence weed test--all weeds severely damaged or killed except A. FATUA, A. MYOSUROIDES, G. APARINE, and possibly E. CRUSGALLI at 1.0 kg/ha; postemergence cereal test--minor wheat, moderate barley and oats, and severe rice injury at 4.0 kg/ha (moderate to severe rice injury at 2.0 kg/ha); preemergence--moderate damage to A. FATUA at 6.0 kg/ha, A. MYOSUROIDES killed at 6.0 kg/ha, and severe injury to L. SATIVUM
REFERENCE: Busschbach, E.J.V., J.J.V. Dallen, and J. Daams, "3-(4-cyclopropylphenyl)-1, 1-dimethylurea, a Selective Herbicide for Weed Control in Cereal Grains," J. Agric. Food Chem. 21(6):1055-1057 (1973).

<4256>
CHEMICAL NAME: Urea, N-2-benzothiazolyl-N,N'-dimethyl-
CHEMICAL COMMON NAME: Methbenzthiazuron
PLANT: Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.28 to 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 168 l/ha
EXPERIMENTAL CONDITIONS: Field study; weed-free plots; 4 locations in Australia; time period--1966 to 1972
EFFECTS: Little if any yield reduction
COMMENTS: All chemicals lowered grain yields to some extent, but variation between chemicals greater for wheat than for barley; in both crops, methabenzthiazuron safest chemical causing only small yield losses at rates up to 2.25 kg/ha
REFERENCE: Elliott, B.R., J.M. Lumb, T.G. Reeves, and T.E. Telford, "Yield Losses in Weed-Free Wheat and Barley Due to Post-Emergence Herbicides", Weed Res. 15(2):107-111 (1975).

<4257>
<4257>
CHEMICAL NAME: Urea, N-2-benzothiazolyl-N,N'-dimethyl-
CHEMICAL COMMON NAME: Methabenzthiazuron
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 2.5 and 5.0 kg/ha
APPLICATION METHODS: Postemergence spray at volume rate of 352 l./ha and pressure of 2.1 kg/cm (2); 70% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse study; plants watered from above before spraying and from below after spraying; 2 replications; visual assessments at intervals, dry weights determined 8 weeks after spraying
EFFECTS: Slow development of interveinal necrosis of exposed leaves; normal regrowth; significant reduction in dry weight compared with control
REFERENCE: Clay, D.V., "The Response of Strawberry to a Range of Foliage Acting Herbicides," Proc. Brit. Weed Control Conf. 11:409-416 (1972).

<4258>
CHEMICAL NAME: Urea, N-2-benzothiazolyl-N,N'-dimethyl-
CHEMICAL COMMON NAME: Methabenzthiazuron
PLANT: Plants; Lotus (LOTUS PEDUNCULATUS)
EXPERIMENTAL DOSE: 0.8, 1.4, and 2.2 kg/ha
APPLICATION METHODS: Preemergence spray; 560 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Tokomaur silt loam, time period--1974 and 1975
EFFECTS: At 2.2 kg/ha, moderate weed control with growth reduction and yield reduction
COMMENTS: Dinoseb most effective of 6 pre-emergence herbicides tested and 2,4-DB best of 5 postemergence herbicides; crop showed no tolerance towards atrazine, cyanazine, metribuzin, or bentazone
REFERENCE: Ivens, G.W., "Preliminary Evaluation of Pre- and Post-Emergence Herbicides in "Maku" Lotus," Proc. 28th. New Zealand Weed and Pest Cont. Conf. 28:31-34 (1975).

<4259>
CHEMICAL NAME: Urea, N-2-benzothiazolyl-N,N'-dimethyl-
CHEMICAL COMMON NAME: Methabenzthiazuron
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Foliar spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1973 and 1974
EFFECTS: Slight crop damage with little or no adverse effect on seed yield or germination
COMMENTS: Ethofumesate and methabenzthiazuron applied to three replicates of perennial ryegrass at tillering stage of sowing year to simulate application for control of grass weeds, did not significantly affect yield or seed germination immediately after harvest
REFERENCE: Evans, A.W. and D.A. Muncey, "Observations on the Effect of Three Herbicides with Promise in the Control of Graminaceous Weeds on the Seed Production of Ryegrass," Proc. 12th Br. Weed Cont. Conf. 2:723-726 (1974).

<4260>
CHEMICAL NAME: Urea, N-2-benzothiazolyl-N,N'-dimethyl-
CHEMICAL COMMON NAME: Methabenzthiazuron
PLANT: Pennycress, field (THLASPI ARVENSE); (VERONICA HEDERAEFOLIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Chickweed, common (STELLARIA MEDIA); Chamomile, wild (MATRICARIA CHAMOMILLA); Deadnettle, purple (LAMIUM PURPUREUM); Lamb's-quarters (CHENOPODIUM ALBUM); Goosegrass (GALIUM APARINE); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 3 kg/ha
APPLICATION METHODS: Preemergence spray in 1000 l./ha water
EXPERIMENTAL CONDITIONS: 10 sq m plot size; randomized block design with 3 replications; 7 trials; weed control rated 6 wk after treatment in pea crop
EFFECTS: Good control of all but V. HEDERAEFOLIA and G. APARINE, moderate control of these two; 100% control of S. MEDIA and L. PURPUREUM; good crop tolerance
REFERENCE: Bosch, E., J. Meyer, and W. Scharen, "The Evaluation of a Combination, Chlorthalmethyl + Methazole, (S 1445) For Weed Control in Arable and Leguminous Crops," Proc. Brit. Weed Control Conf. 12:439-446 (1974).

<4261>
CHEMICAL NAME: Urea, N-2-benzothiazolyl-N,N'-dimethyl-
CHEMICAL COMMON NAME: Metabenzthiazuron
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Wheat (TRITICUM sp.)
EXPERIMENTAL DOSE: 2.75 and 2.8 lb/A
APPLICATION METHODS: Postemergence spray at 20 gpa and 32 psi
EXPERIMENTAL CONDITIONS: 3 experimental sites, 1970-1971; 30 by 9 ft plot size; control of foxtail determined by length of flowering heads; December application at 2 sites and February treatment at other site
EFFECTS: Moderate foxtail control at only one site, February application; poor control at other sites; grain yield similar to control with moderate foxtail control site having greater yield increase
REFERENCE: Baldwin, J.H. and D.B. Livingston, "Chemical Control of ALOPECURUS MYOSUROIDES in Winter Wheat," Proc. Brit. Weed Control Conf. 11:281-287 (1972).

<4262>
CHEMICAL NAME: Urea, N-2-benzothiazolyl-N'-methyl-
CHEMICAL COMMON NAME: Benthiazuron
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 4.0 to 16.0 ppm
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; soil-prepared with varying clay, silt, sand, lime, and organic content; plastic cup culture

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EFFECTS: Reduced growth (fresh weight) of shoots
COMMENTS: Cycloate was most potent herbicide of four, except in soils with high organic matter where delachlor was more active; benzthiazuron was least phytotoxic herbicide in the peat + sand mixtures, but more active than pyrazon in lighter soils of the Newe Ya'ar series; addition of sand to peat and soils increased phytotoxicity of all herbicides; addition of lime to Newe Ya'ar clay soil decreased phytotoxicity of benzthiazuron and pyrazon but not of delachlor
REFERENCE: Horowitz, M. and T. Blumenfeld, "Phytotoxicity in Different Synthetic Soils," Phytoparasitica 1(2):101-110 (1973).

<4263>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-(octahydro-4,7-methano-1H-inden-5-yl)-, (3a alpha, 4 alpha, 5 alpha, 7 alpha, 7a alpha)-
CHEMICAL COMMON NAME: Norea
PLANT: Mustard, Chinese (BRASSICA JUNCEA) ; Ryegrass, perennial (LOLIUM PERENNE) ; St. Augustine's grass (STENOTAPHRUM SECUNDUN) ; Bermudagrass, common (CYNODON DACTYLON) ; Plants
EXPERIMENTAL DOSE: 1.0 to 4.0 lb/A
APPLICATION METHODS: WP formulated with urea
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: Effective control of weeds with no damage to turf grasses at 3.0 lb/A; in greenhouse leachate bioassay, urea form caused less damage than WP applications on crop plants at 2.0 and 4.0 lb/A
COMMENTS: Herbicides retained their normal activity, provided sustained activity for at least 3 months, and showed reduced phytoxicity
REFERENCE: Hewson, W.B. and J.T. Hays, "Ureaform Fertilizer-Herbicide Combinations," J. Agric. Food Chem. 20(4):892-894 (1972).

<4264>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-(octahydro-4,7-methano-1H-inden-5-yl)-, (3a alpha, 4 alpha, 5 alpha, 7 alpha, 7a alpha)-
CHEMICAL COMMON NAME: Norea
PLANT: Castorbean, volunteer (RICINUS COMMUNIS); Cotton (GOSSYPIUM HIRSUTUM); Sorghum, grain (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1.7 kg/ha
APPLICATION METHODS: Preemergence spray; 188 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; time period--1968 to 1970
EFFECTS: Slight to moderate control of castorbean with no adverse effect on crops
COMMENTS: Volunteer castorbean most effectively controlled by preemergence application of propazine in grain sorghum and by fluometuron in cotton; preplant applications of propazine not as effective as preemergence treatments.
REFERENCE: Smith, D.T., A.W. Cooley, D.O. Mooney, and A.F. Wiese, "Herbicidal Control of Volunteer Castorbean," Weed Sci. 20(4):338-340 (1972).

<4265>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-(octahydro-4,7-methano-1H-inden-5-yl)-, (3a alpha, 4 alpha, 5 alpha, 7 alpha, 7a alpha)-
CHEMICAL COMMON NAME: Noruron
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Poor control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4266>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-(octahydro-4,7-methano-1H-inden-5-yl)-, (3a alpha, 4 alpha, 5 alpha, 7 alpha, 7a alpha)-
CHEMICAL COMMON NAME: Norea
PLANT: Yam (DIOSCOREA sp.); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed (AMARANTHUS DUBIUS); Painted-leaf (EUPHORBIA HETEROPHYLLA); Junglerice (ECHINOCHLOA COLONUM)
EXPERIMENTAL DOSE: 3.8 kg/ha
APPLICATION METHODS: Preemergence application delivered in 340 l./ha of water
EXPERIMENTAL CONDITIONS: Heavy clay soil; randomized complete block design with 4 to 8 replications; spring or summer planting; flame weeding used in conjunction with norea
EFFECTS: Weed control poor after 1 application and only moderate after 2 applications; planting of crown pieces from mature tubers gave better yam yields than when small tuber pieces used--first norea application more than doubled yield, second application resulted in less yield than first treatment but more than no treatment; no crop injury from applications
COMMENTS: Flaming before crop emergence reduced weed density with exception of nutsedge; flaming and norea treatment together gave first season control of all weeds except nutsedge; no herbicide treatment gave season long weed control
REFERENCE: Gaskins, M.H. and H. Delpin, "Weed Control in New Plantings of Steroid-Producing DIOSCOREA Species," Weed Sci. 21(3):263-265 (1973).

<4267>
<4267>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-(octahydro-4,7-methano-1H-inden-5-yl)-, (3a alpha, 4 alpha, 5 alpha, 7 alpha, 7a alpha)-
CHEMICAL COMMON NAME: Norea
PLANT: Sesame (SESAMUM INDICUM); Pigweed (AMARANTHUS sp.); Barley (HORDEUM VULGARE); Millet, Japanese (ECHINOCHLOA FRUMENTACEA)
EXPERIMENTAL DOSE: 1.5, 2.0, 3.0, and 4.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley, mustard, and Japanese millet planted as weed crop
EFFECTS: 2 lb/A gave good control of pigweed and millet and did not injure sesame; 4 lb/A gave good pigweed and millet control but caused sesame stand reduction; 1.5 and 3 lb/A gave poor barley control and fair sesame tolerance
COMMENTS: Nominal mustard stand even in untreated plots
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<4268>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-(octahydro-4,7-methano-1H-inden-5-yl)-, (3a alpha, 4 alpha, 5 alpha, 7 alpha, 7a alpha)-
CHEMICAL COMMON NAME: Norea
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.21 to 4.15 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<4269>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3(1,1,2,2-tetrafluorothoxy)phenyl]-
CHEMICAL COMMON NAME: Tetrafluoron
PLANT: Spurge, spotted (EUPHORBIA MACULATA); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.8 and 1.0 lb/A
APPLICATION METHODS: Preemergence; 0.8 lb/A in 1976 and 1.0 lb/A in 1975
EXPERIMENTAL CONDITIONS: Field studies, 1975 and 1976; Bosket silt loam soil; plots, 2 rows 40 ft long; plots seeded with spurge and cotton; herbicide applied same day cotton planted, May 19 in 1975 and May 5 in 1976; 3 replications in 1975 and 5 in 1976; plant counts and visual ratings
EFFECTS: 1975--slight to moderate chlorosis of cotton leaves but plants recovered, 100% spurge control in October; 1976--no cotton injury, 98% spurge control in November
COMMENTS: Two applications of additional herbicides, methazole plus DSMA and linuron plus MSMA applied July 2 and July 15, respectively, necessary in 1976 to control prickly sida and annual grasses
REFERENCE: Baker, R.S., "Preemergence Control of Spotted Spurge in Cotton," Proc. South. Weed Sci. Soc. 30:97-100 (1977).

<4270>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-
CHEMICAL COMMON NAME: Fluometuron
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Foxtail (SETARIA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 2 to 25 ppmw (soil); 10 to 150 micro M (nutrient solution)
APPLICATION METHODS: Addition to soil or nutrient solution
EXPERIMENTAL CONDITIONS: Greenhouse study; clay soil pH--7.4; environmental chamber-- 14 hr photoperiod, 30 C (day) and 20 C (night), and 16,100 lumens/sq m; laboratory study--manometric
EFFECTS: Most toxic of analogues in soil (0.3 to 8.0 ppmw) but varied comparative toxicity in nutrient solution; growth reduction
COMMENTS: Fluometuron most active compound, and demethylated derivative and aniline analog least phytotoxic; activity of monomethyl analog of fluometuron applied via nutrient solution and to clay soil about 50% and 70% of parent compound, respectively; photosynthesis in cotton and redroot pigweed inhibited by fluometuron, to lesser degree by monomethyl analog, and not all by demethyl and aniline analogs
REFERENCE: Rubin, B. and Y. Eshel, "Phytotoxicity of Fluometuron and Its Derivatives to Cotton and Weeds," Weed Sci. 19(5):592-594 (1971).

<4271>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-
CHEMICAL COMMON NAME: Fluometuron
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 0.12 to 0.8 kg/ha
APPLICATION METHODS: Addition to soil; laboratory sprayer; 413 l./ha at 2.11 kg/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soils-- Bledington and Boddington Barn; pot culture; temperature--13 to 23 C; pH--6.3 or 6.9 or 7.3
EFFECTS: Reduced growth of ryegrass with no effect by liming
COMMENTS: Metoxuron, fenuron, metribuzin, and fluometuron more active in Boddington Barn soil than in Bledington soil; prometryne similar in effect in both soils
REFERENCE: Richardson, W.G. and J.D. Banting, "The Phytotoxicity of Various Herbicides in Two Sandy Loam Soils and the Effect of Liming," Weed Res. 17(3):203-207 (1977).

<4272>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-
CHEMICAL COMMON NAME: Fluometuron
PLANT: Pimpernel, common (ANAGALLIS ARVENSIS); Crunchweed (SINAPIS ARVENSIS); Pigweed (AMARANTHUS sp.); Bindweed, field (CONVOLVULUS ARVENSIS); Mustard, black (BRASSICA NIGRA)
EXPERIMENTAL DOSE: 1.6 and 3.2 kg/ha
APPLICATION METHODS: Postemergence application; 200 l./ha; trifluralin and chlorthal-dimethyl incorporated by rototilling; all others not incorporated
EXPERIMENTAL CONDITIONS: Field study; plots sprayed twice a year over a 4-year period; sprinkler irrigation; greenhouse study; residues determined by mustard bioassay
EFFECTS: Effective control of weeds at both rates; moderate residual toxicity to mustard
COMMENTS: Phytotoxicity to weeds in decreasing order: diuron, bromacil, simazine, trifluralin, prometryne, neburon, fluometuron, pyrazon, diphenamid, chlorthal-dimethyl; persistence of herbicides in decreasing order: diuron, bromacil, simazine, neburon, fluometuron, trifluralin, prometryne; control produced by pyrazon improved with the number of applications, but that of diphenamid and chlorthal-dimethyl remained weak and short
REFERENCE: Horowitz, M., T. Blumenfeld, G. Herzlinger, and N. Hulin, "Effects of Repeated Applications of Ten Herbicides on Weed Population, Residue Accumulation and Nitrification," Weed Res. 14(2):97-109 (1974).

<4273>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-
CHEMICAL COMMON NAME: Fluometuron
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in all plants at 1 ppm, less than 50% inhibition in sorghum but 50% or greater inhibition in oat and cucumber at 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<4274>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-
CHEMICAL COMMON NAME: Fluometuron
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.5 and 3 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: 2 locations, Milan, TN (1972 and 1973) and Knoxville, TN (1973); Memphis silt loam at Milan, Sequatchie silt loam at Knoxville; broadcast treatments and treatments to 20-inch bands; 1972 Milan plot size, 13.3 X 60 ft; 1973 Milan and Knoxville plot size, 6.7 X 60 ft; soybeans planted at 3, 6, and 9 weeks after treatment
EFFECTS: 1.5 lb/A band application at Milan--severely reduced yields and slight to moderate vigor reduction at 3 wk planting both years, good stand when planted 6 wk after treatment; 1.5 lb/A Milan broadcast--no yield with 3 wk planting, 50% yield even when planted 9 wk after treatment; 3 lb/A Milan broadcast--all plants planted 3 wk after application died, 9 wk planting resulted in excellent survival in 1972 but poor survival in 1973; Knoxville--minor to moderate vigor reduction compared to Milan tests
COMMENTS: Test differences related to soils and rainfall; Memphis silt loam has less organic matter (0.81%) than Sequatchie loam (1.33%); organic matter alters fluometuron toxicity; Sequatchie has more sand than Memphis loam thus better water movement
REFERENCE: Jeffery, L.S., A.W. Jackson, and T.C. McCutchen, "Tolerance of Soybean to Fluometuron, A Herbicide Commonly Used to Control Weeds in Cotton," Tenn. Farm Home Sci. Prog. Rep. 94:30-32 (1975).

<4275>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-
CHEMICAL COMMON NAME: Fluometuron
PLANT: Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 1.68 kg/ha
APPLICATION METHODS: Preemergence treatment in spray volume of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: 90% weed control 25 days after treatment
COMMENTS: Hophornbeam copperleaf--southwestern weed prevalent in peanuts
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<4276>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-
CHEMICAL COMMON NAME: Fluometuron
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1.0 ppm w
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Laboratory study; pot culture; temperature--25 to 32 C; light intensity--500 ft C; soil--Eufala fine sand
EFFECTS: Marginal leaf chlorosis

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<4276> CONT.
COMMENTS: CUCUMIS SATIVA developed marginal chlorosis with fluometuron, palmate veinal chlorotic pattern with prometryne,; auxin-type manifestations of meristematic tissues with picloram, and an interveinal chlorotic pattern with pyriclor
REFERENCE: Lynd, J.W., C. Rieck, D. Barnes, D. Murray, and P.W. Santelmann, "Indicator Plant Aberrations at Threshold Soil Herbicide Levels," J. Agron. 59(1):194-196 (1967).

<4277>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-
CHEMICAL COMMON NAME: Fluometuron
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.56, 1.10, and 2.20 kg/ha
APPLICATION METHODS: Postemergence spray; 374 l./ha; 0.5% blended surfactant; one, two, or three applications made four, eight, or twelve weeks after cotton emergence
EXPERIMENTAL CONDITIONS: Field study; soil--dry mulch; preplant application of bensulide or trifluralin; directed postemergence application of diuron prior to test applications; time period--1971 through 1974; evaluation time--harvest
EFFECTS: No adverse effects on seed cotton yield, field crop yield, boll components, or fiber properties at application rates evaluated
COMMENTS: DSMA and MSMA applied 4 or 8 weeks after emergence had less effect on cotton yield, boll components, and fiber properties than applications made 12 weeks after emergence; most single, over-the-top applications of DSMA, fluometuron, or DSMA with fluometuron 4 weeks after emergence did not affect cotton yield, boll components, or fiber properties
REFERENCE: Arle, H.F. and K.C. Hamilton, "Over-the-Top Applications of Herbicides in Cotton," Weed Sci. 24(2):166-169 (1976).

<4278>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-
CHEMICAL COMMON NAME: Fluometuron
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Foxtail (SETARIA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion of plants in test solutions containing nutrients
EXPERIMENTAL CONDITIONS: Growth chamber; nutrient solution culture (Hoagland's); evaluation time--up to 96 hr; C(14)-labeled fluometuron
EFFECTS: Translocation and accumulation in various plant parts
COMMENTS: Root uptake from solution culture and translocation indicated that neither differential absorption nor distribution could account for selective action in cotton; accumulation in the cotton shoot even higher than in tested weeds
REFERENCE: Eshel, Y. and B. Rubin, "Metabolism of Fluometuron in Cotton and Weeds as a Basis for Selective Action," Proc. 2nd. Internat. IUPAC Cong. of Pest. Chem. 5:113-123 (1972).

<4279>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3-(trifluromethyl)phenyl]-
CHEMICAL COMMON NAME: C-2059
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.0 lb/A;
APPLICATION METHODS: Postemergence spray; EC Formulation
EXPERIMENTAL CONDITIONS: Greenhouse, field and environmental chamber; applications made at 6 hr intervals for a full day
EFFECTS: Reduced growth of seedling plants; early morning spray more effective than spray in evening
COMMENTS: Inhibition of growth of cotton seedlings varied diurnally; inhibition strongest when plants treated at about daybreak
REFERENCE: Gosselink, J.G. and L.C. Standifer, "Diurnal Rhythm of Sensitivity of Cotton Seedlings to Herbicides," Science 158:120-121 (1967).

<4280>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-
CHEMICAL COMMON NAME: HOE-2991
PLANT: Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Preemergence treatment in spray volume of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: 90% weed control 25 days after treatment
COMMENTS: Hophornbeam copperleaf--southwestern weed prevalent in peanuts
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<4281>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-
CHEMICAL COMMON NAME: HOE-2991
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Velvetleaf (ABUTILON THEOPHRASTI); Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA); Amaranth (AMARANTHUS DUBIUS); Amaranth, palmer (AMARANTHUS PALMERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Pigweed, spiny (AMARANTHUS SPINOSUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Mustard, wild (BRASSICA KABER); Sicklepod (CASSIA TORA); Lamb's-quarters (CHENOPODIUM ALBUM); Goosefoot, nettleleaf (CHENOPODIUM MURALE); Cuphea (CUPHEA CARTHAGENENSIS); (EMILIA SONCHIFOLIA); Eyebane (EUPHORBIA MACULATA); Purslane, milk (EUPHORBIA SUPINA); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Morningglory, tall (IPOMOEA PURPUREA); Cypress, summer (KOCHIA SCOPARIA); Carpetweed (MOLLUGO VERTICILLATA); (PHYSALIS WRIGHTII); Knotweed (POLYGONUM AVICULARE); Bindweed, black (POLYGONUM CONVOLVULUS); Ladysthumb (POLYGONUM PERSICARIA); Purslane, common (PORTULACA OLERACEA); (RICHARDIA

<4281> CONT.
BRASILIENSIS); Saltwort, common (SALSOLA KALI); Thistle, Russian (SALSOLA PESTIFER); Sida, spiny (SIDA SPINOSA); (SESBANIA EXALTATA); Nightshade, black (SOLANUM NIGRUM); Chickweed, common (STELLARIA MEDIA); Cocklebur, common (XANTHIUM PENSYLVANICUM); (BRACHIARIA PLATYPHYLLA); Crowfoot grass (DACTYLOCTENIUM AEGPTIUM); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Crabgrass, large (DIGITARIA SANGUINALIS); (ECHINOCHLOA COLONUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Goosegrass (ELEUSINE INDICA); Stinkgrass (ERAGROSTIS CILIANENSIS); Crowfoot grass (DACTYLOCTENIUM AEGPTIUM); Ryegrass, Italian (LOLIUM MULTIFLORUM); Panicum, Texas (PANICUM TEXANUM); Bluegrass, annual (POA ANNUA); Foxtail, yellow (SETARIA GLAUCA); Foxtail, robust purple (SETARIA VIRIDIS); Johnson grass (SORGHUM HALEPENSE); Witchgrass, old- (PANICUM CAPILLARE)
EXPERIMENTAL DOSE: 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence (1.5 and 2.0 lb/A) and postemergence (1.0 lb/A) sprays using 15-30 gpa at 30 psi; WK and X-77 surfactants used on 0.5% v/v basis with postemergence spray
EXPERIMENTAL CONDITIONS: Field studies; 2 to 4 rows, 25 to 50 ft long plots; randomized complete block design
EFFECTS: Early cotton injury but usually outgrown; effective weed control
REFERENCE: Marrese, R.J., "HOE-2991 (3-tetrafluoroethoxyphenyl-N,N-dimethyl urea) a New Flexible Broad Spectrum Herbicide For Cotton," Proc. Brit. Weed Control Conf. 11:835-840 (1972).

<4282>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-
CHEMICAL COMMON NAME: HOE-2991
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Velvetleaf (ABUTILON THEOPHRASTI); Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA); Amaranth (AMARANTHUS DUBIUS); Amaranth, palmer (AMARANTHUS PALMERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Pigweed, spiny (AMARANTHUS SPINOSUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Mustard, wild (BRASSICA KABER); Sicklepod (CASSIA TORA); Lamb's-quarters (CHENOPODIUM ALBUM); Goosefoot, nettleleaf (CHENOPODIUM MURALE); Cuphea (CUPHEA CARTHAGENENSIS); (EMILIA SONCHIFOLIA); Eyebane (EUPHORBIA MACULATA); Purslane, milk (EUPHORBIA SUPINA); Morninglory, ivyleaf (IPOMOEA HEDERACEA); Morningglory, tall (IPOMOEA PURPUREA); Cypress, summer (KOCHIA SCOPARIA); Carpetweed (MOLLUGO VERTICILLATA); (PHYSALIS WRIGHTII); Knotweed (POLYGONUM AVICULARE); Bindweed, black (POLYGONUM CONVOLVULUS); Ladysthumb (POLYGONUM PERSICARIA); Purslane, common (PORTULACA OLERACEA); (RICHARDIA BRASILIENSIS); Stalword, common (SALSOLA KALI); Thistle, Russian (SALSOLA PESTIFER); Sida, spiny (SIDA SPINOSA); (SESBANIA EXALTATA); Nightshade, black (SOLANUM NIGRUM); Chickweed, common (STELLARIA MEDIA); Cocklebur, common (XANTHIUM PENSYLVANICUM); (BRACHIARIA PLATYPHYLLA); Crowfoot grass (DACTYLOCTENIUM AEGPTIUM); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Crabgrass, large (DIGITARIA SANGUINALIS); (ECHINOCHLOA COLONUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Goosegrass (ELEUSINE INDICA); Stinkgrass (ERAGROSTIS CILIANENSIS); Feathergrass (LEPTOCHLOA FILIFORMIS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Panicum, Texas (PANICUM TEXANUM); Bluegrass, annual (POA ANNUA); Foxtail, yellow (SETARIA GLAUCA); Foxtail, robust purple (SETARIA VIRIDIS); Johnson grass (SORGHUM HALEPENSE); Witchgrass, old- (PANICUM CAPILLARE)
EXPERIMENTAL DOSE: 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence (1.5 and 2.0 lb/A) and postemergence (1.0 lb/A) sprays using 15-30 gpa at 30 psi; wk and X-77 surfactants used on 0.5% v/v basis with postemergence spray
EXPERIMENTAL CONDITIONS: Field studies; 2 to 4 row, 25 to 50 ft long plots; randomized complete block design
EFFECTS: Early cotton injury but usually outgrown; effective weed control
REFERENCE: Marrese, R.J., "HOE-2991 (3-tetrafluoroethoxyphenyl-N,N-dimethyl urea) a New Flexible Broad Spectrum Herbicide For Cotton," Proc. Brit. Weed Control Conf. 11:835-840 (1972).

<4283>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[4-(1-methylethyl)-phenyl]-
CHEMICAL COMMON NAME: DPX-6774
PLANT: Junglerice (ECHINOCHLOA COLONUM); Spangletop, bearded, (LEPTOCHLOA FASCICULARIS); Nutsedge, yellow (CYPERUS ESCULENTUS); Rice (ORYZA SATIVA); Dayflower, spreading (COMMELINA DIFFUSA); Ammannia, purple (AMMANNIA COCCINEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Flatsedge, rice field (CYPERUS IRIA); Arrowhead (SAGGITARIA sp.)
EXPERIMENTAL DOSE: 3.36 kg/ha
APPLICATION METHODS: Preemergence spray; 9.8 l./ha at 1.23 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; 4 locations in Texas; rice field flooding (when applicable) after treatment; soil--Edna clay loam, Edna sandy loam, and Katy sandy loam
EFFECTS: Moderate to effective control of weeds with moderate damage to rice
COMMENTS: IMC 3950 either preemergence or early post as a tank mixture with propanil controlled bearded sprangletop and junglerice; chlorpropham plus propanil showed promise for control of bearded sprangletop; oxadiazon and bifenox controlled bearded sprangletop as preemergence treatments; bifenox plus oxadiazon appeared to be best tank mix for control of several species
REFERENCE: Palmer, R.D. and C.W. Helpert, "Rice Weed Control in the Western Belt of Texas," Proc. S. Weed Sci. Soc. 27:127-135 (1974).

<4284>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[4-(1-methylethyl)phenyl]-
CHEMICAL COMMON NAME: Isoproturon
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Oat, wild (AVENA FATUA); Bluegrass (POA sp.); Marigold, corn (CHRYSANTHEMUM SEGETUM); Goosegrass (GALIUM APARINE); Poppy, corn (PAPAVER RHOEAS); Knotweed (POLYGONUM AVICULARE); Bindweed, black (POLYGONUM CONVOLVULUS); Ladysthumb (POLYGONUM PERSICARIA); Crunchweed (SINAPIS ARVENSIS); Chickweed, common (STELLARIA MEDIA); Speedwell (VERONICA sp.); Lamb's-quarters (CHENOPODIUM ALBUM); Fumitory, common (FUMARIA OFFICINALIS); (MATRICARIA RECUTITA); Radish, wild (RAPHANUS RAPHANISTRUM); Bird's eye (VERONICA PERSICA); Mustard, hedge (SISYMBRIUM OFFICINALE); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1.5 and 2.0 kg/ha
APPLICATION METHODS: Spray at 250 l./ha and 1.38 bars; 50% WP formulation
EXPERIMENTAL CONDITIONS: 1974-1976 tests; trials on winter and spring cereals; 2.5 x 10 m plots with 3 to 4 replicates for weed control tests; 2.5 x 15 m plots with 3 to 4 replicates for cereal tolerance tests; most weeds treated at different growth stages

<4284>
<4284> CONT.
EFFECTS: Weed control ranged from 0 to 100% (wheat yield as percent of control ranged from 97 to 208% and barley yield ranged from 85 to 118% depending on the variety
COMMENTS: Unsprayed controls; for individual weed species control, see index
REFERENCE: Cole, R.J. and G.B. Horsnail, "Broad-Spectrum Weed Control in Winter and Spring Cereals with Isoproturon/Hydroxybenzonitrile Mixtures," Proc. Brit. Weed Control Conf. 13(1):111-118 (1976).

<4285>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[4-(1-methylethyl)phenyl]-
CHEMICAL COMMON NAME: Isoproturon
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Timothy (PHLEUM PRATENSE); Speedwell, creeping (VERONICA FILIFORMIS); Fescue (FESTUCA PRATENSIS)
EXPERIMENTAL DOSE: 2.1 and 6.3 kg/ha
APPLICATION METHODS: Postemergence spray; 337 l./ha at 2.07 bars pressure with Tee jets
EXPERIMENTAL CONDITIONS: Field study; applied at 2-3 leaf stage and tillering
EFFECTS: Slight to moderate adverse effect on all grasses at both growth-stage applications at normal rate (2.1 kg/ha)
COMMENTS: All varieties susceptible to isoproturon, except at tillering stage, and to difenzoquat; perennial and Italian ryegrass varieties resistant to all other herbicides; all high-rate applications, and normal rate of difenzoquat, checked timothy
REFERENCE: Oswald, A.K. and R.J. Hagger, "The Tolerance of Ten Grass Varieties to Six Herbicides With a Potential for Wild Oat Control in Herbage Seed Crops," Proc. 12th. Br. Weed Cont. Conf. 2:715-722 (1974).

<4286>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[4-(1-methylethyl)phenyl]-
CHEMICAL COMMON NAME: Isoproturon
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Oat (AVENA sp.); Darnel (LOLIUM sp.); Bluegrass, annual (POA ANNUA); Meadowgrass, rough stalked (POA TRIVIALIS); Parsley-piert (APHANES ARVENSIS); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Cleavers (GALIUM APARINE); Nettle, dead (LAMIUM sp.); Scorpion grass (MYOSOTIS ARVENSIS); Poppy, field or corn (PAPAVER RHOEAS); Serviceberry, Saskatoon (AMELANCHIER ALNIFLORA); Crunchweed (SINAPIS ARVENSIS); Spurrey, corn (SPERGULA ARVENSIS); Chickweed, common (STELLARIA MEDIA); Speedwell, ivy-leaf (TRIPLEUROSPERMUM MARITUMUM); Bird's-eye (VERONICA PERSICA); Speedwell, ivy-leaf (TRIPLEUROSPERMUM MARITUMUM); Pansy, wild (VIOLA ARVENSIS); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1.5-4.5 lb/A; WP
APPLICATION METHODS: Preemergence and postemergence sprays at 40 lb/sq in. and 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soils-clay or sandy-clay loams; time period - 1972 to 1974; applied spring or winter
EFFECTS: Winter or spring at 2.3 lb/A (preemergence and postemergence), moderate to effective control of grass weeds, and moderate to effective control of broadleaf weeds except GALIUM APARINE; LAMIUM spp., VERONICA PERSICA, and VIOLA ARVENSIS (no or slight control); no damage to wheat or barley
COMMENTS: Over 90% control of A. MYOSUROIDES obtained pre-emergence, and post-emergence up to early-tillering stage; applications made in autumn or winter generally most effective both in terms of weed control and increase in crop yield
REFERENCE: Hewson, R.T., "Isoproturon, A New Selective Herbicide for Control of ALOPECURUS MYOSUROIDES in Winter Cereals," Proc. 12th. Br. Weed Cont. Conf. 1:75-82 (1974).

<4287>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[4-(1-methylethyl)phenyl]-
CHEMICAL COMMON NAME: Isoproturon
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Timothy (PHLEUM PRATENSE); Cocksfoot; Fescue (FESTUCA PRATENSIS)
EXPERIMENTAL DOSE: 2.1 and 6.3 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: All grasses susceptible to moderate to severe damage at normal rate (2.1 kg/ha) except cock's foot (moderately resistant); susceptibility decreased with age through tillering
COMMENTS: Isoproturon caused severe damage to all grasses except when sprayed 8 weeks after cereal harvest; established cock's-foot notably resistant; difenzoquat damaged all grasses even when established, while ethofumesate checked establishing grasses sown in August; none of the other herbicides affected the perennial and Italian rye-grasses; timothy most susceptible, especially to herbicides applied at high doses
REFERENCE: Oswald, A.K., "The Effects of Six Herbicides With a Potential for Wild-Oat Control on Ten Direct and Undersown Grasses," Proc. 1976 Br. Crop Protection Conf. 3:989-999 (1976).

<4288>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[4-(1-methylethyl)phenyl]-
CHEMICAL COMMON NAME: Isoproturon
PLANT: Blackgrass (ALOPECURUS MYOSUROIDES); Oat, wild (AVENA LUDOVICIANA)
EXPERIMENTAL DOSE: 2.0 and 4.0 kg/ha; 75% WP
APPLICATION METHODS: Foliar spray; 250 l./ha at 2.0 bars pressure
EXPERIMENTAL CONDITIONS: Field study; time period--1974 to 1976; 3 locations
EFFECTS: Effective control of A. MYOSUROIDES (2.0 kg/ha) and A. LUDOVICIANA (4.0 kg/ha)
COMMENTS: Effectiveness of treatments on mixed populations varied, and some herbicides antagonistic to one another in mixture; most consistent mixture was 2.0 kg/ha isoproturon with 0.5 kg/ha difenzoquat which when applied in autumn controlled all three grass weeds
REFERENCE: Holroyd, J. and M.E. Thornton, "Herbicides and Herbicide Mixtures for the Control of AVENA FATUA, A. LUDOVICIANA, and ALOPECURUS MYOSOROIDES in Winter Cereals," Proc. 1976 Brit. Crop Prot. Conf.-Weeds, 1:103-110 (1976).

<4289>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[4-(1-methylethyl)phenyl]-
CHEMICAL COMMON NAME: Isoproturon
PLANT: Thistle, common (CIRSIUM sp.); Sorrel, garden (RUMEX ACETOSA); Chamomile, corn (ANTHEMIS ARVENSIS); Ryegrass (AVENA sp.); Foxtail, slender (ALOPECURUS MYOSUROIDES); Thistle, sow (SONCHUS sp.); Barley (HORDEUM VULGARE); Clover, white (TRIFOLIUM REPENS)
EXPERIMENTAL DOSE: 2.5 kg/ha
APPLICATION METHODS: Spring postemergence spray at 2.21 bars pressure in 225 l./ha water
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications; weed populations before and after treatments assessed; white clover inflorescence count made on 10 separate grids, 0.23 m(2) each, prior to harvest
EFFECTS: No effect on clover but weed control poor
COMMENTS: Individual weed control information not given
REFERENCE: Mead, H., D. Livingston and B.L. Ross, "Herbicide Tolerance Studies in White Clover," Proc. Brit. Weed Control Conf. 13(2):677-679(1976).

<4290>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-[4-(1-methylethyl)phenyl]-
CHEMICAL COMMON NAME: Isoproturon
PLANT: Oat, wild (AVENA FATUA); Oat (AVENA SATIVA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Ryegrass, perennial (LOLIUM PERENNE); Foxtail, slender (ALOPECURUS MYOSUROIDES)
EXPERIMENTAL DOSE: 0.77, 1.40, 1.55, 2.11, 2.80, 3.15, 5.6, and 6.31 kg/ha
APPLICATION METHODS: Trial 1--postemergence spray at 3.164 kg/cm(2) and at low volume, early and late applications 1 to 2 weeks apart; trial 2--postemergence early and late treatments; trial 3--logarithmic treatments as tillers forming
EXPERIMENTAL CONDITIONS: Trial 1--oat control studies in commercial ryegrass fields, 3 x 10 m plots in 3 randomized blocks, 2 test sites; trial 2--foxtail control studies in ryegrass fields;trial 3--ryegrass tolerance tests, logrithmic treatments of 6.31, 3.15, 1.55, and 0.77 kg/ha
EFFECTS: Trial 1--moderate oat control, growth reduction in ryegrass; trial 2--good foxtail control at high dose (2.8 kg/ha) applied early and very high dose (5.6 kg/ha) applied early, no harm to ryegrass cultivar Melle; trial 3--extremetly toxic to all 3 varieties of ryegrass tested
REFERENCE: Mead, H., B.L. Ross, and R.J. Finch, "Preliminary Investigations on the Control of Wild-Oat (AVENA FATUA L.) Cultivated Oak (AVENA SATIVA L.) and Blackgrass (ALOPECURUS MYOSUROIDES HUDS.) in Seed Crops of Various Varieties of Perennial and Italian Ryegrass," Proc. Brit. Weed Control Conf. 12(2):707-714 (1974).

<4291>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-phenyl-
CHEMICAL COMMON NAME: Fenuron
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 0.09 to 0.39 kg/ha
APPLICATION METHODS: Addition to soil; laboratory sprayer; 413 l./ha at 2.11 kg/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soils-- Bledington and Boddington Barn; pot culture; temperature--13 to 23 C; pH--6.3 or 6.9 or 7.3
EFFECTS: Reduced growth of ryegrass with no effect by liming
COMMENTS: Metoxuron, fenuron, metribuzin, and fluometuron more active in Boddington Barn soil than in Bledington soil; prometryne similar in effect in both soils
REFERENCE: Richardson, W.G. and J.D. Banting, "The Phytotoxicity of Various Herbicides in Two Sandy Loam Soils and the Effect of Liming," Weed Res. 17(3):203-207 (1977).

<4292>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-phenyl-
CHEMICAL COMMON NAME: Fenuron
PLANT: Plants
EXPERIMENTAL DOSE: 10, 20, and 30 lb/A
APPLICATION METHODS: Hand broadcast (25% pellets)
EXPERIMENTAL CONDITIONS: Field study; old-field test sites
EFFECTS: Moderate control of weeds at highest rate
COMMENTS: Total vegetation control of all species increased directly with increased rate of herbicide; most complete control occurred with bromacil, karbutilate, and picloram plus diuron.
REFERENCE: Shipman, R.D., "Soil-Applied Herbicides in the Control of Native Broadleaf Weeds and Grasses," Proc. Northeast. Weed Sci. Soc. 28:331-334 (1974).

<4293>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-phenyl-
CHEMICAL COMMON NAME: Fenuron
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2) M, 10(-3), and 10(-4) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect noted
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4294>
<4294>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-phenyl-
CHEMICAL COMMON NAME: Fenuron
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in all plants at 1 and 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<4295>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-phenyl-
CHEMICAL COMMON NAME: Fenuron
PLANT: Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 0.12, 0.25, 0.50, and 1.00 lb/A; 0.5% surfactant
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: Moderate control at all rates
COMMENTS: Of five phenylureas, diuron was most active as foliar spray on young crabgrass; liquid and wettable powder formulations performed equally well; addition of surfactants to aqueous suspensions of diuron greatly enhanced herbicidal activity in greenhouse and field experiments
REFERENCE: McWhorter, C.G. and T.J. Sheets, "The Effectiveness of Five Phenylureas as Foliar Sprays and the Influence of Surfactants on Their Activity," Proc. Southern Weed Conf. 14:54-59 (1961).

<4296>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-phenyl-
CHEMICAL COMMON NAME: Fenuron
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.4 to 819.2 ppmw (of soil)
APPLICATION METHODS: Added to soil in water solutions
EXPERIMENTAL CONDITIONS: Greenhouse study; soils--Yolo fine sandy loam, Yolo clay loam, and Egbert loam; persistence studied in container culture in which oats indicator plant was planted, harvested, replanted, etc on 4 to 8 wk cycle
EFFECTS: At 1.6 ppmw and higher concentrations, persisted for 2 or more planting cycles
COMMENTS: Initial toxicity in order of decreasing toxicity was: fenuron and monuron, CIPC, dalapon and TCA, CMIPC, and TBA; comparative inactivation in order of most rapid to slowest inactivation, was: TCA, dalapon, CIPC, CMIPC, TBA, fenuron, and monuron
REFERENCE: Crafts, A.S. and H. Drever, "Experiments with Herbicides in Soils," Weeds 8(1):12-18 (1960).

<4297>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-phenyl-
CHEMICAL COMMON NAME: Fenuron
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sowthistle, perennial (SONCHUS ARVENSIS)
EXPERIMENTAL DOSE: 0.33 lb/sq rd
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; combinations of herbicide treatments, seasonal application, cultivation, and cropping investigated over 3 yr period (1955-1957)
EFFECTS: Effective thistle control with 3-plus years residual effect
COMMENTS: Canada thistle and perennial sowthistle reacted to 2,4-D and MCPA; ester and amine forms of 2,4-D equally effective for sowthistle, while both and MCPA equal for Canada thistle; both herbicides prevent seed production, kill susceptible plants and weaken resistant plants
REFERENCE: Derscheid, L.A., R.L. Nash, and G.A. Wicks, "Thistle Control With Cultivation, Cropping and Chemicals," Weeds 9(1):90-102 (1961).

<4298>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-phenyl-
CHEMICAL COMMON NAME: Fenuron
PLANT: Plants
EXPERIMENTAL DOSE: 4.0 to 12.0 lb/A; extruded pellets
APPLICATION METHODS: Hand-broadcasting
EXPERIMENTAL CONDITIONS: Field study; time period--1957 to 1959; 3 range sites--sandy upland, prairie upland, and bottomland
EFFECTS: Herbage yield reduced in prairie upland and bottomland applications; no effect in sandy upland application
COMMENTS: Neither herbicide affected herbage production on sandy upland site; heavy rates of 2,3,6-TBA decreased production on both prairie upland and bottomland sites characterized by clay or clay-loam soils; greater reduction resulted on prairie upland site having cool-season grass
REFERENCE: Hughes, E.E. and R.A. Darrow, "Herbage Production Responses to Pelleted Fenuron and Granular 2,3,6-TBA," J. Range Manag. 17:197-199 (1964).

<4299>
CHEMICAL NAME: Urea, N,N-dimethyl-N'-phenyl-
CHEMICAL COMMON NAME: Fenuron
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.30 to 5.38 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<4300>
CHEMICAL NAME: Urea, N,N'-bis(2,2,2-trichloro-1-hydroxyethyl)-
CHEMICAL COMMON NAME: DCU
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2) M, 10(-3), and 10(-4) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4301>
CHEMICAL NAME: Urea, N,N'-bis(2,2,2-trichloro-1-hydroxyethyl)-
CHEMICAL COMMON NAME: DCU
PLANT: Oat, wild (AVENA FATUA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Mallow (MALVA sp.); Beet, sugar (BETA VULGARIS); Foxtail (SETARIA sp.)
EXPERIMENTAL DOSE: 7 and 14 lb/A
APPLICATION METHODS: Preplanting treatments
EXPERIMENTAL CONDITIONS: Dry spring season; DCU disked 4 in. deep
EFFECTS: Moderate weed control, grass control somewhat better than broadleaf control; no injury to beet seedlings
REFERENCE: Holst, E.M., E.G. Eckroth, and C.E. Carmany, "Chemical Weed Control in Some Holly Areas in Montana, Colorado, and Wyoming," J. Am. Soc. Sugar Beet Technol. 9(6):499-502 (1957).

<4302>
CHEMICAL NAME: Urea, N,N'-bis(2,2,2-trichloro-1-hydroxyethyl)-
CHEMICAL COMMON NAME: Dichloral urea
PLANT: Plants; Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 10.0 lb/A
APPLICATION METHODS: Preemergence spray; 100 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight to moderate weed control with reduced stand of direct-seeded cauliflower but no adverse effect on transplanted cauliflower
COMMENTS: Premerge, Dow General and K-1131-Na, and all dinitros, gave excellent control of weeds with no bean crop injury for two months
REFERENCE: Jacob, W.C., "Pre-Emergence Weed Control in Lima Beans and Cauliflower," Proc. N.E. Weed Cont. conf. 5:1-5 (1951).

<4303>
CHEMICAL NAME: Urea, N,N'-bis(2,2,2-trichloro-1-hydroxyethyl)-
CHEMICAL COMMON NAME: Dichloral urea
PLANT: Gladiolus; Ragweed, common (AMBROSIA ELATIOR); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Bromegrass, downy (BROMUS TECTORUM); Crabgrass, large (DIGITARIA SANGUINALIS); Purslane, common (PORTULACA OLERACEA); Weeds
EXPERIMENTAL DOSE: 3, 6, and 9 lb/A
APPLICATION METHODS: Preemergence spray at 50 gpa
EXPERIMENTAL CONDITIONS: Corms and cormels planted June 15, herbicides applied June 21; weed counts taken July 12; approximately 1/2 acre planted in corms and 1/2 acre in cormels; 50 x 2 ft plots with 4 replications
EFFECTS: Corms--17, 40, and 52% weed control at 3,6, and 9 lb/A, respectively; cormels--47, 62, and 65% weed control at 3, 6, and 9 lb/A, respectively
COMMENTS: Overall weed control considered for tabulations
REFERENCE: Carlson, R.F., J.E. Moulton, and P.R. Krone, "Further Developments in Gladiolus Weed Control," Proc. Northeast. Weed Control Conf. (1951).

<4304>
<4304>
CHEMICAL NAME: Urea, N,N'-bis(2,2,2-trichloro-1-hydroxyethyl)-
CHEMICAL COMMON NAME: Dichloral urea
PLANT: Gladiolus; Ragweed, common (AMBROSIA ELATIOR); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Bromegrass, downy (BROMUS TECTORUM); Crabgrass, large (DIGITARIA SANGUINALIS); Purslane, common (PORTULACA OLERACEA); Weeds
EXPERIMENTAL DOSE: 3, 6, and 9 lb/A
APPLICATION METHODS: Preemergence spray at 50 gpa
EXPERIMENTAL CONDITIONS: Corms and cormels planted June 15, herbicides applied June 21; weed counts taken July 12; approximately 1/2 acre planted in corms and 1/2 acre in cormels; 50 X 2 ft plots with 4 replications
EFFECTS: Corms--17, 40, and 52% weed control at 3,6, and 9 lb/A, respectively; cormels--47, 62, and 65% weed control at 3, 6, and 9 lb/A, respectively
REFERENCE: Carlson, R.F., J.E. Moulton, and P.R. Krone, "Further Developments in Gladiolus Weed Control," Proc. Northeast. Weed Control Conf. (1951).

<4305>
CHEMICAL NAME: Urea, N,N'-bis-3-(1,2,4-triazole)-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4306>
CHEMICAL NAME: Urea, N,N'-di(2,4-dichlorophenoxyacetyl)thio-
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 1.0, 2.5, and 5.0X10(-3)M (3 ml/plant)
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Mean number buds/section and number of sections with buds were reduced in proximal root sections at all application rates
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

<4307>
CHEMICAL NAME: Urea, N,N'-dimethyl-N-[5-(trifluoromethyl)-1,3,4-thiadiazol-2-yl]-
CHEMICAL COMMON NAME: G.S. 29696
PLANT: Crabgrass (DIGITARIA TIMORENSIS); Crabgrass (DIGITARIA HORIZONTALIS); (AGERATUM CONYZOIDES); Foxtail, bristly (SETARIA PALLIDE-FUSCA); Nightshade, black (SOLANUM NIGRUM); Nutsedge, purple (CYPERUS ROTUNDUS); Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 1.34 to 5.38 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; October trial; weed assessment in cane fields 105 days after spraying
EFFECTS: Weed control--74 to 90.4%, best control above 1.77 kg/ha; cane germination severely reduced
COMMENTS: Weed results tabulated together
REFERENCE: McIntyre, G., "Weed Control 1. Evaluation of New Herbicides," Mauritius Sugar Ind. Res. Inst., Annu. Rep. 18:117-119 (1970).

<4308>
CHEMICAL NAME: Urea, N'-(chlorobicyclo[2.2.1]hept-2-yl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Hercules 7175
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6)M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.2 to 4.97 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<4309>
CHEMICAL NAME: Urea, N'-(3-chloro-4-methoxyphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Metoxuron
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 0.21 to 6.25 kg/ha
APPLICATION METHODS: Addition to soil; laboratory sprayer; 413 l./ha at 2.11 kg/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soils-- Bledington and Boddington Barn; pot culture; temperature--13 to 23 C; pH--6.3 or 6.9 or 7.3
EFFECTS: Growth reduction highly significant in both soil types with addition of lime
COMMENTS: Metoxuron, fenuron, metribuzin, and fluometuron more active in Boddington Barn soil than in Bledington soil; prometryne similar in effect in both soils
REFERENCE: Richardson, W.G. and J.D. Banting, "The Phytotoxicity of Various Herbicides in Two Sandy Loam Soils and the Effect of Liming," Weed Res. 17(3):203-207 (1977).

<4310>
CHEMICAL NAME: Urea, N'-(3-chloro-4-methoxyphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Metoxuron
PLANT: Oat, wild (AVENA FATUA); Foxtail, slender (ALOPECURUS MYOSUROIDES); Bluegrass, annual (POA ANNUA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Goosegrass (GALIUM APARINE); Bindweed, black (POLYGONUM CONVOLVULUS); Ladysthumb (POLYGONUM PERSICARIA); Chamomile, wild (MATRICARIA CHAMOMILLA); Galinsoga (GALINSOGA PARVIFLORA); Chickweed, common (STELLARIA MEDIA); Plantain, hoary (PLANTAGO MEDIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Nettle, stinging (URTICA URENS); Lamb's-quarters (CHENOPODIUM ALBUM); Cress, garden (LEPIDIUM SATIVUM); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE); Oat (AVENA SATIVA); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, 1.5, 2.0, 3.0, 4.0, and 6.0 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays using 1000 l./ha water
EXPERIMENTAL CONDITIONS: Greenhouse tests; comparisons made with pH 40-51 and methabenzthiazuron; postemergence weed exposure concentrations--0.25, 0.5, and 1.0 kg/ha; postemergence cereal exposure--1,2, and 4 kg/ha; preemergence exposure concentrations--1.5, 3.0, and 6.0 kg/ha
EFFECTS: Postemergence weed test--0.5 and 1.0 kg/ha seriously damaged or killed all weeds except A. MYOSUROIDES (serious damage at 1.0 kg/ha), E. CRUSS-GALLI (minor damage at 1.0 kg/ha), and P. MEDIA (moderate damage at 1.0 kg/ha); postemergence cereal test--moderate to severe wheat damage; minor barley damage, and minor to moderate oat damage at 4.0 kg/ha, minor damage to all at 1.0 kg/ha, no data for rice; preemergence--moderate to severe A. FATUA and A. MYOSUROIDES injury and minor injury to L. SATIVUM at 6.0 kg/ha, no injury to A. FATUA or L. SATIVUM at 1.5 kg/ha
REFERENCE: Busschbach, E.J.V., J.J.V. Dallen, and J. Daams, "3-(4-cyclopropylphenyl)-1, 1-dimethylurea, a Selective Herbicide for Weed Control in Cereal Grains," J. Agric. Food Chem. 21(6):1055-1057 (1973).

<4311>
CHEMICAL NAME: Urea, N'-(3-chloro-4-methoxyphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Metoxuron
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 4 and 8 kg/ha
APPLICATION METHODS: Postemergence spray at volume rate of 352 l./ha and pressure of 2.1 kg/cm (2); 80% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse study; plants watered from above before spraying and from below after spraying; 2 replications; visual assessments at intervals, dry weights determined 8 weeks after spraying
EFFECTS: Interveinal necrosis of exposed leaves between 2 and 4 weeks after spraying; normal regrowth; significant decrease in dry weight compared with control
REFERENCE: Clay, D.V., "The Response of Strawberry to a Range of Foliage Acting Herbicides," Proc. Brit. Weed Control Conf. 11:409-416 (1972).

<4312>
CHEMICAL NAME: Urea, N'-(3-chloro-4-methoxyphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Metoxuron
PLANT: Oat, wild (AVENA LUDOVICIANA); Foxtail, slender (ALOPECURUS MYOSUROIDES); Wheat (TRITICUM sp.)
EXPERIMENTAL DOSE: 3.6 kg/ha
APPLICATION METHODS: Preemergence spray in 600 l./ha water at a pressure of 2 kg/cm(2); 80% WP formulation
EXPERIMENTAL CONDITIONS: Wild oat and foxtail seeded at 4 rates--0, 130, 260, and 390 seeds/m(2); wheat sown at rate of 500 seeds/m(2); split plot design with 4 replications, herbicides were subplots and the weed populations the plots
EFFECTS: Wild oat--mean dry weight of 75.3 g/ha, check mean dry weight of 101.8 g/ha; foxtail--mean dry weight of 7.6 g/ha, check mean dry weight of 21.7 g/ha; wheat--mean grain yield of 29.4 g/ha; check grain yield of 20.6 g/ha
COMMENTS: Check was sown the same as treated plots; effectiveness against wild oat decreased as infestation increased
REFERENCE: Catizone, P., "Trials on Wild Oat (AVENA LUDOVICIANA, DURIEU) Control in Winter Wheat Comparing New Herbicides," Proc. Brit. Weed Control Conf. 12:45-52 (1974).

<4313>
CHEMICAL NAME: Urea, N'-(3-chloro-4-methoxyphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Metoxuron
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Oat (AVENA sp.); Parsley-piert (APHANES ARVENSIS); Cleavers (GALIUM APARINE); Nettle, dead (LAMIUM sp.); Scorpion grass (MYOSOTIS ARVENSIS); Poppy, field or corn (PAPAVER RHOEAS); Crunchweed (SINAPIS ARVENSIS); Spurrey, corn (SPERGULA ARVENSIS); Chickweed, common (STELLARIA MEDIA); Speedwell, ivy-leaf (TRIPLEUROSPERMUM MARITUMUM); Bird's-eye (VERONICA PERSICA); Speedwell, ivy-leaf (TRIPLEUROSPERMUM MARITUMUM); Pansy, wild (VIOLA ARVENSIS); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 3.8 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays at 40 lb/sq in. and 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soils-clay or sandy clay loams; time period - 1972 to 1974; applied spring or winter

<4313>
<4313> CONT.
EFFECTS: Moderate control of grass weeds and moderate to effective control of broadleaf weeds except LAMIUM spp.; not recommended for some grain crop varieties
COMMENTS: Over 90% of A. MYOSUROIDES obtained pre-emergence, and post-emergence up to early-tillering stage; applications made in autumn or winter generally most effective in both terms of weed control and increase in crop yield
REFERENCE: Hewson, R.T., "Isoproturon, A New Selective Herbicide for Control of ALOPECURUS MYOSUROIDES in Winter Cereals," Proc. 12th. Br. Weed Cont. Conf. 1:75-82 (1974).

<4314>
CHEMICAL NAME: Urea, N'-(3-chloro-4-methoxyphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Metoxuron
PLANT: Oat, wild (AVENA FATUA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 2.8-4.0 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays; 20 gal/A at 32 lb/sq in; and broadcast (G)
EXPERIMENTAL CONDITIONS: Field study; 13 sites in Britain; time period--1970-1972
EFFECTS: Moderate control of A. FATUA with no adverse effect on wheat; postemergence treatment more effective than preemergence
COMMENTS: Best control obtained from pre-emergence tri-allate granules and chlortoluron, and late post-emergence benzoylprop-ethyl; all treatments tended to perform less well at highest weed populations; good yield responses obtained
REFERENCE: Proctor, J.M. and D.B. Livingston, "Chemical Control of AVENA FATUA in Winter Wheat," Proc. 11th. Br. Weed Cont. Conf. 11(1):288-293 (1972).

<4315>
CHEMICAL NAME: Urea, N'-(3-chloro-4-methoxyphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Metoxuron
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Wheat (TRITICUM sp.)
EXPERIMENTAL DOSE: 3.6 and 4.0 lb/A
APPLICATION METHODS: Pre-and postemergence spray at 20 gpa and 32 psi
EXPERIMENTAL CONDITIONS: 11 experiments, 1970-1972; natural foxtail infestation; 1970/71--early and late autumn and early and late spring applications; 1971/72--spring applications; 30 by 9 ft plot size; control determined by length of foxtail flowering heads
EFFECTS: 1970/71--70.1 and 66.7% control with early and late spring applications, respectively, control with autumn treatments better; 1971/72--65.4% foxtail control; wheat yield increased over control
COMMENTS: No percentages for flower head length reductions in autumn for 1970/71--data available from too few sites
REFERENCE: Baldwin, J.H. and D.B. Livingston, "Chemical Control of ALOPECURUS MYOSUROIDES in Winter Wheat," Proc. Brit. Weed Control Conf. 11:281-287 (1972).

<4316>
CHEMICAL NAME: Urea, N'-(3-chloro-4-methylphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Chlortoluron
PLANT: Oat, wild (AVENA LUDOVICIANA); Foxtail, slender (ALOPECURUS MYOSUROIDES); Wheat (TRITICUM sp.)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Preemergence spray in 600 l./ha water at a pressure of 2 kg/cm(2); 80% WP formulation
EXPERIMENTAL CONDITIONS: Wild oat and foxtail seeded at 4 rates--0, 130, 260, and 390 seeds/m(2); wheat sown at rate of 500 seeds/m(2); split plot design with 4 replications, herbicides were subplots and the weed populations the plots
EFFECTS: Wild oat--mean weight of 76.6 g/ha dry weight compared to check mean of 101.8 g/ha; foxtail--mean weight of 6.1 g/ha compared to check mean value of 21.7 g/ha; wheat grain yield greater than check
COMMENTS: Reduction in dry weight considered significant for both grasses but to a greater degree for foxtail; check was sown the same as treated plots; effectiveness against wild oat decreased as infestation increased
REFERENCE: Catizone, P., "Trials on Wild Oat (AVENA LUDOVICIANA, DURIEU) Control in Winter Wheat Comparing New Herbicides," Proc. Brit. Weed Control Conf. 12:45-52 (1974).

<4317>
CHEMICAL NAME: Urea, N'-(3-chloro-4-methylphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: C-2242
PLANT: Crabgrass (DIGITARIA TIMORENSIS); Crabgrass (DIGITARIA HORIZONTALIS); (AGERATUM CONYZOIDES); Foxtail, bristly (SETARIA PALLIDE-FUSCA); Nightshade, black (SOLANUM NIGRUM); Nutsedge, purple (CYPERUS ROTUNDUS); Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 1.34 to 5.38 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; October trial; weed assessment in cane fields 105 days after spraying
EFFECTS: Weed control--75 to 79.8%, best control in range of 2.31 to 3.06 kg/ha; severe growth reduction in cane
COMMENTS: Weed results tabulated together
REFERENCE: McIntyre, G., "Weed Control 1. Evaluation of New Herbicides," Mauritius Sugar Ind. Res. Inst., Annu. Rep. 18:117-119 (1970).

<4318>
CHEMICAL NAME: Urea, N'-(3-chloro-4-methylphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Chlortoluron
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Oat (AVENA sp.); Parsley-piert (APHANES ARVENSIS); Cleavers (GALIUM APARINE); Nettle, dead (LAMIUM sp.); Scorpion grass (MYOSOTIS ARVENSIS); Poppy, field or corn (PAPAVER RHOEAS); Crunchweed (SINAPIS ARVENSIS); Spurrey, corn (SPERGULA ARVENSIS); Chickweed, common (STELLARIA MEDIA); Speedwell, ivy-leaf (TRIPLEUROSPERMUM MARITUMUM); Bird's-eye (VERONICA PERSICA); Speedwell, ivy-leaf (TRIPLEUROSPERMUM MARITUMUM); Pansy, wild (VIOLA ARVENSIS); Wheat (TRITICUM

<4318> CONT.
AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.4 - 3.2 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays at 40 lb/sq in. and 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soils-clay or sandy clay loams; time period - 1972 to 1974; applied spring or winter
EFFECTS: At 2.4 or 3.2 lb/A, moderate control of grasses and moderate to effective control of broadleaf weeds except GALIUM APARINE, LAMIUM spp. and VIOLA ARVENSIS; not recommended for some grain crop varieties; preemergence treatments about same as postemergence treatments
COMMENTS: Over 90% of A. MYOSUROIDES obtained pre-emergence, and post-emergence up to early-tillering stage; applications made in autumn or winter generally most effective in both terms of weed control and increase in crop yield
REFERENCE: Hewson, R.T., "Isoproturon, A New Selective Herbicide for Control of ALOPECURUS MYOSUROIDES in Winter Cereals," Proc. 12th. Br. Weed Cont. Conf. 1:75-82 (1974).

<4319>
CHEMICAL NAME: Urea, N'-(3-chloro-4-methylphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Chlorotcluron
PLANT: Oat, wild (AVENA FATUA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 2.4 and 3.2 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays; 20 gal/A at 32 lb/sq in; and broadcast (G)
EXPERIMENTAL CONDITIONS: Field study; 13 sites in Britain; time period--1970-1972
EFFECTS: Moderate control of A. FATUA and no adverse effect on wheat; preemergence treatment more effective than postemergence
COMMENTS: Best control obtained from pre-emergence tri-allate granules and chlortoluron, and late post-emergence benzoylprop-ethyl; all treatments tended to perform less well at highest weed populations; good yield responses obtained
REFERENCE: Proctor, J.M. and D.B. Livingston, "Chemical Control of AVENA FATUA in Winter Wheat," Proc. 11th. Br. Weed Cont. Conf. 11(1):288-293 (1972).

<4320>
CHEMICAL NAME: Urea, N'-(3-chloro-4-methylphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Chlortoluron
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Wheat (TRITICUM sp.)
EXPERIMENTAL DOSE: 2.4 and 3.2 lb/A
APPLICATION METHODS: Pre-and postemergence spray at 20 gpa and 32 psi
EXPERIMENTAL CONDITIONS: 11 experiments, 1970-1972; natural foxtail infestation; 1970/71--early and late autumn and early and late spring applications; 1971/72--autumn and spring applications; 30 by 9 ft plot size; control measured by length of foxtail flowering heads
EFFECTS: 1970/71--85.6 and 56.4% reduction in length of flowering head with early and late spring applications respectively, good control in autumn (better than spring); 1971/72--92.7 and 83.5% autumn and spring control, respectively; grain yeild increased over control
COMMENTS: No percentages for flower head length reductions in autumn for 1970/71--data available from too few sites
REFERENCE: Baldwin, J.H. and D.B. Livingston, "Chemical Control of ALOPECURUS MYOSUROIDES in Winter Wheat," Proc. Brit. Weed Control Conf. 11:281-287 (1972).

<4321>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-isopropyl-N-(2-propynyl)-
CHEMICAL COMMON NAME: Proban
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 5.70 and 4.08 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<4322>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Soybean (GLYCINE MAX);Grasses;Broadleaf weeds
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Preplant spray with soil incorporation (5 cm depth); preemergence spray; 188 l./ha; varied combinations of herbicides and types of applications studied
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy clay loam and Cecil sandy loam; 188 l./ha
EFFECTS: Moderate control of grass weeds and slight control of broadleaves with no damage to soybeans in preemergence spray
COMMENTS: Sequential treatment of vernolate with linuron, prometryne, or chloramben ester controlled weeds more effectively in soybeans than did trifluralin or nitralin applied with the same preemergence treatments; soybean injury was not severe enough to reduce seed yields in any year.
REFERENCE: Johnson, B.J., "Effect of Herbicide Combinations on Weeds and Soybeans," Weed Sci. 19(6): 740-742 (1971).

<4323>
<4323>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Soybean (GLYCINE MAX);Grasses;Broadleaf weeds
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Soil incorporated by rototiller; injection; postemergence spray; 188 to 282 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy loam; herbicides studied either 2 or 3 years; combinations of herbicides evaluated also
EFFECTS: Effective control of weeds with slight damage to soybean in postemergence spray
COMMENTS: Vernolate injected into sandy loam soil controlled higher percentage of early weeds in soybeans in 2 years out of 3 when compared with incorporated vernolate at same rate by conventional methods; late season weed control was enhanced by split applications of herbicides applied postemergence in sequence with vernolate; chloroxuron applied early postemergence plus linuron or prometryne applied in split applications as late and layby treatments gave the best weed control.
REFERENCE: Johnson, B.J., "Response of Weeds and Soy Beans to Vernolate and Other Herbicides," Weed Sci. 19(4):372-377 (1971).

<4324>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Nutsedge (CYPERUS sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Pigweed (AMARANTHUS sp.); Pigweed, spiny (AMARANTHUS SPINOSUS); Jimsonweed (DATURA STRAMONIUM); Purslane, common (PORTULACA OLERACEA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 to 3.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 50% WP Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of broadleafs and grasses except nutsedge (no control) with good corn tolerance
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<4325>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Crabgrass (DIGITARIA sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA); Pigweed (AMARANTHUS sp.); Spanish needles (BIPENS BIPINNATA)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Postemergence spray; 40 gal/A at 25 psi; 50% WP Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of all weeds
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<4326>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Broadleaf weeds; Grasses; Nutsedge, yellow (CYPERUS ESCULENTUS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preemergence spray; 38 gal/A at 20 psi; 50% WP Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate weed control except nutsedge (very slight control) and no adverse effect on potato yield
COMMENTS: Incorporated type treatments effective in giving season-long annual grass control, but pre-emergence treatments were not; EPTC only effective material on heavy stand of nutsedge
REFERENCE: Sanok, W.J., "Evaluation of Herbicides for Control of Weeds in Long Island Potatoes-1973," Proc. Northeast. Weed Sci. Soc. 28:282-286 (1974).

<4327>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Capewood (ARCTOTHECA CALENDULA); Oat (AVENA SATIVA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.28 and 0.56 kg/ha
APPLICATION METHODS: Postemergence spray; 112 l./ha
EXPERIMENTAL CONDITIONS: Field study; time period-- 1966 to 1970; 5 locations in Australia
EFFECTS: Effective control of capeweed at 0.56 kg/ha with no adverse effect on crop yields
COMMENTS: Most satisfactory herbicides tested for control of capeweed were bromoxynil, linuron, diquat and prometryne; in one year tested, methabenzthiazuron effective
REFERENCE: Reeves, T.G. and J.M. Lumb, "Selective Chemical Control of Capeweed in Wheat," Aust. J. Exp. Agric. Anim. Husb. 12:60-64 (1972).

<4328>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Castorbean, volunteer (RICINUS COMMUNIS); Cotton (GOSSYPIUM HIRSUTUM); Sorghum, grain (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.9 and 1.7 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; 188 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; time period--1968 to 1970
EFFECTS: Slight castorbean control in preemergence (1.7 kg/ha) and moderate to effective control

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postemergence (0.9 kg/ha) with no adverse effect on crops
COMMENTS: Volunteer castorbean most effectively controlled by preemergence application of propazine in grain sorghum and by fluometuron in cotton; preplant applications of propazine not as effective as preemergence treatments.
REFERENCE: Smith, D.T., A.W. Cooley, D.O. Mooney, and A.F. Wiese, "Herbicidal Control of Volunteer Castorbean," Weed Sci. 20(4):338-340 (1972).

<4329>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Mustard, wild (BRASSICA KABER); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate overall weed control including barnyard grass but effective control of mustard and pigweed with no adverse effect on LIROPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<4330>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 1.4 kg/ha
APPLICATION METHODS: Preemergence spray; 188 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy loam or Cecil clay loam; time period--1969 to 1971
EFFECTS: Moderate weed control with significant damage to sunflower
COMMENTS: Alachlor applied in combination with either chlorpropham or prometryne satisfactorily controlled grasses and broadleaf weeds in sunflowers planted in April and June from 1969 through 1971; higher percentage of broadleaf weeds controlled with herbicides applied preemergence to sunflowers planted in April than when applied to sunflowers planted in June.
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Preplant or Preemergence on Weeds and Sunflowers," Crop Sci. 12(1):650-653 (1972).

<4331>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 0.56 and 1.12 kg/ha
APPLICATION METHODS: Postemergence (early and late) spray; 188 l./ha (early) and 235 l./ha (late, directed spray); WK surfactant (0.5%)
EXPERIMENTAL CONDITIONS: Field study; soil-Cecil sandy clay loam; time period--1969 to 1971
EFFECTS: Effective control of grasses with moderate control of broadleaf weeds and no adverse effect on sunflower
COMMENTS: Excellent grass control and poor broadleaf weed control obtained from early postemergence treatments of RP 17623 when applied as over-the-top spray at either cotyledon or first-leaf stage of sunflower growth, weed control results similar to RP 17623 from several herbicides applied as late-directed postemergence sprays; early postemergence treatments with RP 17623 caused some early injury to sunflower plants and reduction in achene oil percent when compared with achenes from untreated plants, but achene yields not reduced
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Postemergence on Weeds and Sunflowers," Crop Sci. 12(1):695-697 (1972).

<4332>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Grasses; Broadleaf weeds; Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 13 locations in Iowa
EFFECTS: Moderate control of grasses and effective control of broadleafs with no adverse effect on soybean
COMMENTS: Dinitroaniline chemicals applied at proper rates for organic matter levels present provided good to excellent grass control; rate probably more critical for organic matter on BAS-3901, CG-10832 and dinitramine than for trifluralin; organic matter exceedingly critical for nitraline; vernolate provided good grass control and at most locations, better broadleaf control than dinitroaniline chemicals; preplant incorporated plus overlay treatment can increase broadleaf and overall weed control and usually result in less phototoxicity to the crop
REFERENCE: Jennings, V.M., D.W. Staniforth, and W.G. Lovely, "Soybean Herbicide Evaluations Across Iowa in 1973," Proc. N. Cent. Weed Contr. Conf. 28:42-45 (1973).

<4333>
<4333>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Poor control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4334>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Potato (SOLANUM TUBEROSUM); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 1 lb/A
APPLICATION METHODS: WP treatments applied as sprays at 30 psi and 40 gpa volume
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications for each experiment; plot size--4 rows or 12 ft x 20 ft; Sassafras loam soil; center 2 rows harvested for yield determination
EFFECTS: 73% broadleaf and 56% grass control; no significant effect on potato yield when compared with cultivated control
COMMENTS: Combination with other herbicides increased weed control
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

<4335>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Soybean (GLYCINE MAX); Sesbania, hemp (SESBANIA EXALTATA); Mexicanweed (CAPERONIA CASTANAEFOLIA); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 1.68 and 2.24 kg/ha
APPLICATION METHODS: Preemergence spray; 2.0 m swath
EXPERIMENTAL CONDITIONS: Field study; soil--heavy clay; evaluation time--2 or 6 wk
EFFECTS: Slight damage to soybean and moderate control of weeds
COMMENTS: Linuron or metribuzin resulted in good control of hemp sesbania and mexicanweed; no preemergence herbicide tested gave good morningglory control, but metribuzin and RP-17623 resulted in fair control
REFERENCE: Eastin, E.F., "Control of Problem Weeds in Texas Soybeans," Proc. South. Weed Sci. Soc. 26:67-73 (1973).

<4336>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Soybean (GLYCINE MAX); Sesbania, hemp (SESBANIA EXALTATA); Mexicanweed (CAPERONIA CASTANAEFOLIA); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Dayflower, common (COMMELINA COMMUNIS)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Postemergence spray; 2.0 m swath; 0.5% X-77 surfactant
EXPERIMENTAL CONDITIONS: Field study; soil--heavy clay; evaluation time--2 or 6 wk
EFFECTS: Moderate damage to soybeans with effective control of hemp sesbania and moderate control of other weeds
COMMENTS: As postemergence treatments, bentazon plus surfactant applied topically and linuron plus surfactant or metribuzin plus surfactant directed gave good to excellent control of dayflower, hemp sesbania was controlled by treatments containing linuron, metribuzin or prometryne, all plus surfactant and directed; mexicanweed was controlled by directed applications of treatments containing linuron, metribuzin, prometryne or 2,4-DB, all plus surfactant; good control of morningglory was obtained with directed applications of treatments containing 2,4-DB, dinoseb + naptalam plus surfactant, or prometryne plus surfactant
REFERENCE: Eastin, E.F., "Control of Problem Weeds in Texas Soybeans," Proc. South. Weed Sci. Soc. 26:67-73 (1973).

<4337>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in all plants at 1 and 10 ppm; shoot--less than 50% inhibition in

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sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<4338>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Carrot (DAUCUS CAROTA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence 55 days after planting
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; seedbeed prepared April 25; 4 replications; weed control evaluated on August 2
EFFECTS: Good pigweed control, poor foxtail control
COMMENTS: Herbicide combinations also tested; no injury rating for carrots; heavy rains delayed planting until May 2
REFERENCE: Noll, C.J., "Evaluation of Eight Herbicides Alone and in Combination for Weed Control in Carrots," Proc. Northeast. Weed Sci. Soc. 28:167-171 (1974).

<4339>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1 lb/A
APPLICATION METHODS: Postemergence treatment in 30 gal water per acre; surfactant WK, 0.5% by volume of tank mix
EXPERIMENTAL CONDITIONS: 3 year experiment (1968-1970); 4 applications at 2-to 3-day intervals to each plot, initial application made in June; randomized split-plot design, 16 ft rows 3 ft apart; directed postmemergence spray to plant base; plant injury, stem damage, and yield among primary observations
EFFECTS: Early season plant injury significant in second and third years at applications 2-4; stem damage significant only after application 4; seed yield average for 3 years not significantly different from control (no applications); no late season injury
COMMENTS: Early season injury--lower leaves killed from spray application; late season injury--chlorotic venation and leaf deterioration
REFERENCE: Johnson, B.J., "Multiple Applications of Herbicides on Soybeans," Ga. Agric. Res. 14(1):5-8 (1972).

<4340>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.28 to 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 168 l/ha
EXPERIMENTAL CONDITIONS: Field study; weed-free plots; 4 locations in Australia; time period--1966 to 1972
EFFECTS: Reduced yield
COMMENTS: All chemicals lowered grain yields to some extent, but variation between chemicals greater for wheat than for barley; in both crops, methabenzthiazuron safest chemical causing only small yield losses at rates up to 2.25 kg/ha
REFERENCE: Elliott, B.R., J.M. Lumb, T.G. Reeves, and T.E. Telford, "Yield Losses in Weed-Free Wheat and Barley Due to Post-Emergence Herbicides", Weed Res. 15(2):107-111 (1975).

<4341>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Corn (ZEA MAYS); Chickweed, common (STELLARIA MEDIA); Orach (ATRIPLEX PATULA); Lamb's-quarters (CHENOPODIUM ALBUM); Speedwell (VERONICA sp.); Sowthistle, annual (SONCHUS OLERACEUS)
EXPERIMENTAL DOSE: 1.68 and 3.36 kg/ha
APPLICATION METHODS: Preemergence application made with knapsack sprayer at a volume of 562 l./ha
EXPERIMENTAL CONDITIONS: Oxford clay soil; rows--3.7 m long and 61 cm apart, final corn density, 11 plants/m(2); split plot, randomized soil design with 3 replications
EFFECTS: 1.68 kg/ha gave 96% weed control and 3.36 kg/ha gave 99% control; no significant effect on maize yield when compared with handweeded control
COMMENTS: Ludwig notes that residual activity may prove phytotoxic to a different crop planted the following year on the same land
REFERENCE: Ludwig, J.W., "Effects of Herbicides on the Productivity of Fodder Maize with Special Reference to Pre-emergence Applications of 2,4-D Amine," Weed Res. 13(1):1-11 (1973).

<4342>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Corn (ZEA MAYS); Chickweed, common (STELLARIA MEDIA); Speedwell (VERONICA sp.); Knotweed (POLYGONUM AVICULARE); Fool's parsley (AETHUSA CYNAPIUM)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Preemergence applications with an Oxford Precision Sprayer at 2.11 kg/cm(2) pressure and 225 l./ha volume
EXPERIMENTAL CONDITIONS: Maize sown in plots of 3 rows, 3.7 m long and 61 cm part; Oxford clay soil; handweeded controls; weeds assessed in June after May 2 applications; experiments made under wet conditions

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EFFECTS: Effective control of all plants but fool's-parsley, no control at 1.12 kg/ha and 61% control at 2.24 kg/ha; no significant effect on maize yield
COMMENTS: Results also reported of effectiveness of some herbicide combinations
REFERENCE: Ludwig, J.W., "The Use of a Low Dose of Atrazine Alone and in Mixtures with Other Herbicides in the Maize Crop," Weed Res. 13:12-18 (1973).

<4343>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Periwinkle, common (VINCA MINOR); St. John's-wort (HYPERICUM CALYCINUM); (DELASPERMA ALBA); (GAZANIA SPLENDENS); Ivy (HEDERA CANARIENSIS); Ivy, English (HEDERA HELIX); Iceplant (CARPOBROTUS EDULE); Stonecrop (SEDUM BREVIFOLIUM); Bugleweed (AJUGA REPENS)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Postemergence application using a knapsack sprayer at a pressure of 30 psi
EXPERIMENTAL CONDITIONS: Field experiments; July 26 applications--injury evaluations made September 1, September 30 and October 22 of the same year; each treatment replicated 4 times
EFFECTS: V. MINOR--no injury; H. CALYCINUM--no injury; D. ALBA--caused red leaves and stunting at both rates; G. SPLENDENS--very minor injury; H. CANARIENSIS--no injury; H. HELIX--no injury; C. EDULE--red spotted foliage; S. BREVIFOLIUM--no injury; A. REPENS--minor injury
REFERENCE: Elmore, C.L., W.D. Hamilton, E. Johnson, and T. Kretchun, "Ground Cover Species Tolerance to Herbicide Applications," Calif. Agric. 26(3):3-4 (1972).

<4344>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Plants; Potato (SOLANUM TUBEROSUM); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 1.25 lb/A, 50% WS
APPLICATION METHODS: Postemergence, preemergence, and preplant incorporated sprays; 38 gal/A; 20 psi; granular materials applied with cone-type applicator; varied combined treatments evaluated
EXPERIMENTAL CONDITIONS: Field study; three locations; rye cover crop after harvest
EFFECTS: Slight-moderate control of weeds in preemergence application and no adverse effect on crop plants
COMMENTS: Most treatments did not result in commercially acceptable control levels because of a number of conditions which reduced effectiveness of weed control in 1972
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<4345>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.0 lb/A; WP
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 40 gal/A; 730616 TeeJet spray tip at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Moderate control of weeds with no adverse effect on potatoes
COMMENTS: Preplant incorporated herbicides R-7465, EPTC, and vernolate good single herbicides; increases in herbicidal effectiveness obtained when EPTC and vernolate combined with R-7465; alachlor alone excellent herbicide applied preemergence; increased weed control effectiveness resulted when this herbicide combined with linuron, chlorbromuron, metobromuron, methazole, or dinoseb
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

<4346>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Soybean (GLYCINE MAX); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A; WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold loam; soybeans planted with no tillage in wheat stubble; evaluation time--1 mo; soybeans planted one day before herbicide applications
EFFECTS: At 1.0 lb/A, effective control of ragweed and moderate control of panicum with slight reduction in vigor of soybean
COMMENTS: Only paraquat and glyphosate applied alone gave good weed control; Paraquat and metribuzin reduced soybean stands but not seriously; alachlor and penoxalin did not control panicum; penoxalin or linuron in combination with glyphosate or paraquat improved control of many weed species over penoxalin and linuron applied alone; combinations of the two with either of the contact herbicides (3-way combinations) did not improve degree of control effected by single herbicides applied with paraquat or glyphosate; combinations of RH-2915 and alachlor did not improve weed control over either herbicide applied alone; considerable improvement resulted when glyphosate or paraquat added to the combination
REFERENCE: Michieka, R.W., R.D. Ilnicki, and J.R. Justin, "Weed Control in Double-Crop Soybeans with Herbicides Applied Alone and in Combination with Paraquat or Glyphosate," Proc. Northeast. Weed Sci. Soc. 31:61-69 (1977).

<4347>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Potato (SOLANUM TUBEROSUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 1.25 lb/A
APPLICATION METHODS: Spray applied at 20 psi pressure and 38 gal/A volume; preemergence application
EXPERIMENTAL CONDITIONS: April planting; plots--2 rows wide by 30 ft long; randomized complete block design; treatments replicated five times in experiments 1 and 3 and four times in others; total of 5 experiments; rye seeded following potato harvest
EFFECTS: Commercially unacceptable weed control; no indication of potato injury; no effect on fall rye crop
COMMENTS: Author notes that growing conditions (cool spring and high June rainfall) caused vigorous weed growth and retarded potato growth, thus reason for commercially unacceptable weed control; herbicide combinations also discussed
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<4348>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Broadleaf weeds; Grasses; Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.75 to 2.00 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of broadleafs at all rates with less effective control of grasses and slight injury to potato at 1.75 and 2.00 lb/A rates
COMMENTS: Chlorbromuron and linuron gave effective control of broad-leaved perennial weed species growing in white potatoes; late season annual grass control attained only by combining alachlor with chlorbromuron and linuron
REFERENCE: Murphy, H.J., "Effect of Combinations of Chlorbromuron and Linuron with Alachlor on Yield and Weed Control in White Potatoes in Maine," Proc. Northeast. Weed Sci. Soc. 28:299-302 (1974).

<4349>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Grasses
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Effective control of all weeds except quackgrass with no adverse effect on potato yield
COMMENTS: Metolachlor applied preemergence and penoxalin applied layby did not provide satisfactory control of broadleaved weeds; none of the drag-off treatments with dinitramine, USB-3153, or trifluralin controlled broadleaved weeds; USB-3153 and trifluralin applied at drag-off did not give satisfactory control of quackgrass
REFERENCE: Murphy, H.J. and T. Gajewski, "Effect of Several Herbicides Applied Preemergence, at Drag-Off and Layby on Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 31:176-179 (1977).

<4350>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1.0 and 2.0 lbA
APPLICATION METHODS: Preemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--gravelly silt loam
EFFECTS: Effective control of weeds with no adverse effect on potato yield
COMMENTS: EPTC and profluralin applied preplant incorporated provided full season control of annual barnyard grass in potatoes; either compound when combined with preemergence herbicides linuron, chlorbromuron, or DNBP provided full season control of BRASSICA NIGRA, BRASSICA CAMPESTRIS, POLYGONUM PERSICARIA, and CHENOPODIUM ALBUM
REFERENCE: Murphy, H.J., "Effect of Several Combinations of Preplant Incorporated and Preemergence Herbicides on Weed Control in Potatoes," Proc. Northeast. Weed Sci. Soc. 29:281-283 (1975).

<4351>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Velvetleaf (ABUTILON THEOPHRASTI); Potato (SOLANUM TUBEROSUM); Foxtail (SETARIA sp.)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Preemergence spray; 363 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras sandy loam; evaluation times--2 and 3 mos
EFFECTS: Effective control of weeds; no effect on potato yield
COMMENTS: Chlorbromuron and metribuzin controlled weeds comparably to standard linuron; alachlor alone not effective but very effective used in combination with chlorbromuron, metribuzin, and linuron; postemergence application of metribuzin very phytotoxic to potatoes and weeds
REFERENCE: Henne, R.C. and R.T. Guest, "Alachlor, Chlorbromuron, and Metribuzin for Weed Control in Potatoes," Proc. Northeast. Weed Sci. Soc. 28:296-298 (1974).

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<4352>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Grasses
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Field study; soil--Brookston clay loam; time period--1970 to 1972
EFFECTS: Slight control of grasses
COMMENTS: Triazine and urea herbicides reduced sucrose level of seedlings of barnyardgrass and yellow foxtail compared with their effectiveness in controlling these weeds by pre-emergence application to maize; in 2 years out of 3, a significant positive correlation obtained between sucrose content of the third leaf and number of these grasses on field plots 2 months after planting
REFERENCE: Marriage, P. B. and W. J. Saidak, "Control of Barnyardgrass and Yellow Foxtail by Herbicides in Relation to the Sucrose Content of the Seedling Leaves," Weed Res. 14(2):115-118 (1974).

<4353>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Broadleaf weeds; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplant and preemergence sprays; 80 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Effective control of broadleafs with moderate control of grasses and no adverse effect on potato yield
COMMENTS: Most herbicides somewhat ineffective for annual grass control; S-6044, M&B20035, and oxadiazolin all ineffective for control of annual grasses; combinations of oryzalin with metribuzin, methazole, and linuron also provided good broadleaved weed and quackgrass control; oryzalin alone not effective for annual grass or quackgrass control
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in White Potatoes in Maine - 1973," Proc. Northeast. Weed Sci. Soc. 28:287-295 (1974).

<4354>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Soybean (GLYCINE MAX); Sida, spiny (SIDA SPINOSA)
EXPERIMENTAL DOSE: 0.56 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--Loring silt loam and Collins silt loam; preplant soil incorporation of herbicides not effective for prickly sida; evaluation times--3 wk (preemergence) and 2 wk (postemergence)
EFFECTS: No adverse effect on soybeans and effective control of sida for 2 of 3 years
COMMENTS: Chlorbromuron provided better control of prickly sida than did linuron which was more consistently effective than naptalam plus dinoseb; chlorbromuron applied as preemergence treatment caused slight crop injury; in most cases preemergence treatments followed by cultivation were effective in providing season-long control; descending order of effectiveness for prickly sida control by the postemergence herbicides was: chlorbromuron, metribuzin, prometryne, dinoseb
REFERENCE: Jeffery, L.S., J. Connell, T. McCutchen, and J.R. Overton, "Response of Prickly Sida and Soybeans to Various Herbicides," Weed Sci. 24(2):202-204 (1976).

<4355>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate control of weeds and no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<4356>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Grasses; Broadleaf weeds; Lupine, narrow-leaf (LUPINUS ANGUSTIFOLIUS)
EXPERIMENTAL DOSE: 1.1 and 2.2 kg/ha
APPLICATION METHODS: Preemergence spray; surface applied immediately after seeding; 50% WP; 100-200 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--7 types; 18 locations in western Australia; time period--1972 to 1974
EFFECTS: Severely reduced lupin yield at 2.2 kg/ha at one of two locations with effective control of broadleaf and annual grass weeds
COMMENTS: Significant yield increases obtained on at least one occasion with alachlor, diuron, linuron, simazine, and trifluralin; diuron, linuron, and simazine each resulted in significant lupin yield reduction on one occasion
REFERENCE: Allen, J.M., "2. The Response of Narrow-Leafed Lupins to Preemergence Herbicides," Aust. J. Exp. Agric. Anim. Husb. 17(84):118-125 (1977).

<4357>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 0.84 kg/ha
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Field study, 3 years; 3 by 6 m plots; Mattapeake soil; randomized complete block design with 4 replications
EFFECTS: No soybean injury; good foxtail and ragweed control, no nutsedge control
REFERENCE: Parochetti, J.V., R.W. Feeny, and S.R. Colby, "Preemergence Herbicides plus Postemergence Chloroxuron on Soybeans," Weed Sci. 20(6):548-553 (1972).

<4358>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Oat (AVENA SATIVA); Oat (AVENA SATIVA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; time period--1962 to 1964; residue effect on subsequent crops (oats and soybean) studied after one and two years
EFFECTS: Moderate weed control with no adverse effect on crop plants
COMMENTS: Simazine most effective for controlling annual weed species in asparagus; linuron, diphenamid, monuron, and DCPA controlled weed species; other herbicides tested less effective
REFERENCE: Sandhu, S.S. and J.K. Greig, "Effects of Herbicides on Asparagus and Weeds, and Residues Retained in the Soil," Am. Soc. Hort. Sci. 88:372-377 (1966).

<4359>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Velvetgrass (HOLCUS LANATUS); Timothy (PHLEUM PRATENSE)
EXPERIMENTAL DOSE: 0.56, 1.12, and 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 450 l./ha; Oxford precision sprayer--'0' size nozzle
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effect on timothy and increased yield with moderate control of HOLCUS at 1.12 and 2.24 kg/ha; most effective of herbicides tested
COMMENTS: Linuron proved most successful in controlling HOLCUS; gave highest yields of timothy at hay cut and heaviest individual seed heads; glyphosate particularly severe on timothy growth; asulam offered reasonable degree of control at a high rate of spraying
REFERENCE: Harkess, R.D. and R.A. Hope, "The Control of Yorkshire Fog (HOLCUS LANATUS L.) in Timothy Swards," Proc. 12th. Br. Weed Cont. Conf. 2:733-736 (1974).

<4360>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Plants; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.7 and 3.4 kg/ha
APPLICATION METHODS: Preemergence spray; 1000 l./ha; incorporated by raking (trifluralin) or sprinkler irrigation
EXPERIMENTAL CONDITIONS: Field study; time period--1973 and 1974; Lebanon
EFFECTS: Moderate weed control and reduced potato yield
COMMENTS: Weedy check plots caused reduction of 58% of potato tuber yield as compared to all season weed-free conditions; all herbicides tested reduced oven dry weight of weeds by 55-92% as compared to unweeded control plots; only napropamide and fluchloralin gave significantly higher potato tuber yields
REFERENCE: Saghir, A.R. and G. Markoullis, "Effects of Weed Competition and Herbicides on Yield and Quality of Potatoes," Proc. 12th. Br. Weed Cont. Conf. 2:533-539 (1974).

<4361>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Lorox
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Postplanting spray; 30 gal/A at 30 lb/sq in
EXPERIMENTAL CONDITIONS: Field study; soil--Stoy silt loam; application one week after planting in winter; time period--1961 and 1962
EFFECTS: Moderate weed control
COMMENTS: Effective weed control, lasting until June of following year obtained with atrazine, CIPC, kloben, simazine, lorox, ametryne, and prometryne; atrazine, kloben and simazine gave nearly 100% control; atrazine caused plant injury with more dead plants in treated plots than in control planting; simazine and kloben safer materials
REFERENCE: Sherwood, L.V. and H.R. Kemmerer, "The Influence of Winter Applied Preemergence Herbicides on Weed Growth among Woody Ornamental Plants," Am. Soc. Hort. Sci. 85:657-662 (1964).

<4362>
<4362>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Soybean (GLYCINE MAX); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Lamb's-quarters (CHENOPODIUM ALBUM); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 1.5 lb/A; 50% WP
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Bucks silt loam
EFFECTS: Effective control of all weeds with slight injury to soybean but no adverse effect on yield
COMMENTS: RH-2512 preemergence provided excellent control of large crabgrass, fall panicum, common lambsquarters, redroot pigweed, and smallflower galinsoga; RH-2915 preemergence provided weed control equivalent to RH-2512
REFERENCE: Hartnett, J.P., "Weed Control in Soybeans with RH-2512 and RH-2915," Proc. Northeast. Weed Sci. Soc. 29:4-8 (1975).

<4363>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Broadleaf weeds; Grasses; Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Preplant incorporated (7 cm depth); preemergence and postemergence sprays; 308 l./ha; combined treatments
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: Moderate control of broadleafs and slight control of grasses with no phytotoxicity of carrots in postemergence applications; no effect on carrot yield
COMMENTS: Combination treatment consisting of trifluralin preplant incorporated followed by a postemergence application of linuron provided season long weed control; carrots tolerated postemergence applications of Hoe 23408 which selectively controlled annual grass weeds; combination of Hoe 23408 plus linuron resulted in more rapid weed kill than with either material alone
REFERENCE: Henne, R.C., "Chemical Weed Control in Carrots," Proc. Northeast Weed Sci. Soc. 31:238-243 (1977).

<4364>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Plants; Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Witchgrass, old- (PANICUM CAPILLARE); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 10 to 25 gal/A
EXPERIMENTAL CONDITIONS: Field study; 4 locations in ND, SD, and MN
EFFECTS: Moderate to effective weed control with no adverse effect on potatoes
COMMENTS: Penoxalin preemergence or lightly incorporated treatment after seeding wheat gave excellent annual weed control and demonstrated good selectivity; penoxalin also demonstrated good to excellent weed control in potatoes either as preemergence or dragoff treatment; penoxalin treatments produced good yields in both crops
REFERENCE: Jorgenson, E.M., C.B. Wingfield, and G.I. Nzewi, "Use of Penoxalin Herbicide for Weed Control in Spring Grains and Potatoes," Proc. North Cent. Weed Cont. Conf. 30:72-74 (1975).

<4365>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Linuron
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.55 to 5.36 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<4366>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: DCMU
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.0 lb/A;
APPLICATION METHODS: Postemergence spray; EC Formulation
EXPERIMENTAL CONDITIONS: Greenhouse, field and environmental chamber; applications made at 6 hr intervals for a full day
EFFECTS: Reduced growth of seedling plants; time of day (morning vs evening) made no difference in effect
REFERENCE: Gosselink, J.G. and L.C. Standifer, "Diurnal Rhythm of Sensitivity of Cotton Seedlings to Herbicides," Science 158:120-121 (1967).

<4367>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Nutsedge (CYPERUS sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Pigweed (AMARANTHUS sp.); Pigweed, spiny (AMARANTHUS SPINOSUS); Jimsomweed (DATURA STRAMONIUM); Purslane, common (PORTULACA OLERACEA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.8 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 80% WP Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of broadleafs and grasses except nutsedge (no control) with good corn tolerance
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<4368>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Crabgrass (DIGITARIA sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA); Pigweed (AMARANTHUS sp.); Spanish needles (BIPENS BIPINNATA)
EXPERIMENTAL DOSE: 0.8 and 2.0 lb/A
APPLICATION METHODS: Postemergence spray; 40 gal/A at 25 psi; 80% WP Formulation
EXPERIMENTAL CONDITIONS: Field Study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of all weeds
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<4369>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
EXPERIMENTAL DOSE: 6.7, 13.4 and 20.2 kg/ha
APPLICATION METHODS: Preemergent herbicide administered annually in spring; applications were 1,2, and 3 times recommended rate
EXPERIMENTAL CONDITIONS: Field studies conducted for 6 years; soil -- sandy clay loam surface overlying medium clay at 40-50 cm depth; average annual rainfall 640 mm; 6 mature trees for each treatment
EFFECTS: Minor chlorosis during third year; during fourth year injury was severe on some trees with rates higher than recommended; yield reduction observed during fourth, fifth and sixth years at 20.2 kg/ha
COMMENTS: Possible injury symptoms in second year masked by red spider mite infestation and hail storm in December; first season was dry and third season results masked again by spider mites and by drought
REFERENCE: Campbell, J.E. and A. D. Mears, "Effects of Long-Term Use of Several Herbicides on Apple Trees," Aust. J. Exp. Agric. Anim. Husb. 14(67):262-265 (1974).

<4370>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Castorbean, volunteer (RICINUS COMMUNIS); Cotton (GOSSYPIUM HIRSUTUM); Sorghum, grain (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.9 and 1.1 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; 188 l/ha
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; time period--1968 to 1970
EFFECTS: Slight to moderate control of castorbean in preemergence spray; more effective control in postemergence application
COMMENTS: Volunteer castorbean most effectively controlled by preemergence application of propazine in grain sorghum and by fluometuron in cotton; peplant applications of propazine not as effective as preemergence treatments.
REFERENCE: Smith, D.T., A.W. Cooley, D.O. Mooney, and A.F. Wiese, "Herbicidal Control of Volunteer Castorbean," Weed Sci. 20(4):338-340 (1972).

<4371>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Plants
EXPERIMENTAL DOSE: 10, 20, and 30 lb/A
APPLICATION METHODS: Hand broadcast (G and pellets); 8% G formulation
EXPERIMENTAL CONDITIONS: Field study; old-field test sites
EFFECTS: Moderate control of weeds at highest rate
COMMENTS: Total vegetation control of all species increased directly with increased rate of herbicide; most complete control occurred with bromacil, karbutilate, and picloram plus diuron.
REFERENCE: Shipman, R.D., "Soil-Applied Herbicides in the Control of Native Broadleaf Weeds and Grasses," Proc. Northeast. Weed Sci. Soc. 28:331-334 (1974).

<4372>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Plants
EXPERIMENTAL DOSE: 2.0, 4.0, and 6.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; time period--1967 to 1969; soils--Ramona sandy loam and Greenfield
EFFECTS: Moderate damage to asparagus at all rates

<4372>
<4372> CONT.
COMMENTS: Chemicals which killed or severely damaged asparagus include monuron, diuron, simazine, sinbar, sindone-B, treflan, tenoran, and CIPC; vegiben marginal; of herbicides tested in these trials for pre-emergence weed control in direct-seeded asparagus, balan, bensulide, and brominal offer most promising results
REFERENCE: Whiting, F.L., F.H. Takatori, and J.M. Lyons, "Weed Control in Asparagus," Calif. Agric. 25(1):4-5 (1971).

<4373>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Soil (50 g) containing herbicides added to surface of soil in which apple trees were growing
EXPERIMENTAL CONDITIONS: Environmental chamber; light intensity--21.6 klux; photoperiod--15 hr; temperature--21 C (day) and 16 C (night)
EFFECTS: No adverse effect on photosynthesis
COMMENTS: Monuron caused greatest decrease in photosynthesis, followed by atrazine and simazine, diuron had no effect on photosynthesis; monuron and atrazine applications resulted in decreased plastochron index; influence of herbicides on photosynthesis apparent 10 days following treatment; effect persisted for remainder of experimental period of 40 days
REFERENCE: Sharma, D.P., D.C. Ferree, and F.O. Hartman, "Effect of Some Soil Applied Herbicides on Net Photosynthesis and Growth of Apple Trees," Hortscience 12(2):153-154 (1977).

<4374>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Sorghum (SORGHUM BICOLOR); Plants
EXPERIMENTAL DOSE: 2.5 kg/ha
APPLICATION METHODS: Fkormulation--80% diuron; preemergence treatments as spray in 1000 l. water
EXPERIMENTAL CONDITIONS: Rain-fed conditions, light black soil; 4 replications, randomized block design with plot size 610 cm x 458 cm
EFFECTS: Marked depressive effect on sorghum establishment; effective weed control; slight reduction in grain yield
COMMENTS: Simazine and atrazine more effective in weed control and grain yield than other herbicides tested; combination of simazine (1.25 kg/ha) preemergence plus 2,4-D (1 kg/ha) postemergence also gave good weed control and grain yield
REFERENCE: Krishnamurthy, K., "Effect of Herbicides on Weeds and Yield of Sorghum," Indian J. Agric. Sci. 40(5):474-480 (1970).

<4375>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Prince of Wales feather (AMARANTHUS POWELLII); Wireweed (POLYGONUM AVICULARE); Cress, pepper (LEPIDIUM HYSSOPIFOLUM); Lettuce, prickly (LACTUCA SCARIOLA); Lamb's-tongue (PLANTAGO LANCEOLATA); Couchgrass (CYNODON DACTYLON); Prairie grass (BROMUS sp.); Love-grass (ERAGROSTIS sp.); Lamb's-quarters (CHENOPODIUM ALBUM); Sowthistle, annual (SONCHUS OLERACEUS); Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.1 kg/ha
APPLICATION METHODS: Late August treatments applied with knapsack sprayer at 30 psi pressure and calibrated to deliver 600 l/ha
EXPERIMENTAL CONDITIONS: 1 year old peach trees; 4 replicates, 2 trees in each plot; sandy clay loam soil; herbicides applied late August for 2 consecutive years; assessments made in December and March of both growihg seasons and also in November during the second growing season
EFFECTS: Broadleaf weeds suppressed, but not grass weeds; no improvement in peach tree growth; no injury to peach trees
COMMENTS: November and December applications of praquat and diquat necessary second growing season to maintain commercially acceptable weed control
REFERENCE: Koffmann, W. and J. Kaldor, "Chemical Weed Control in Young Peach Trees," Aust. J. Exp. Agric. Anim. Husb. 15:566-569 (1975).

<4376>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Pimpernel, common (ANAGALLIS ARVENSIS); Crunchweed (SINAPIS ARVENSIS); Pigweed (AMARANTHUS sp.); Bindweed, field (CONVOLVULUS ARVENSIS); Mustard, black (BRASSICA NIGRA)
EXPERIMENTAL DOSE: 0.8 and 1.6 kg/ha
APPLICATION METHODS: Postemergence application; 200 l./ha; trifluralin and chlorthal-dimethyl incorporated by rototilling; all others not incorporated
EXPERIMENTAL CONDITIONS: Field study; plots sprayed twice a year over a 4-year period; sprinkler irrigation; greenhouse study; residues determined by mustard bioassay
EFFECTS: Effective control of weeds at both rates; moderate residual toxicity to mustard
COMMENTS: Phytotoxicity to weeds in decreasing order: diuron, bromacil, simazine, trifluralin, prometryne, neburon, fluometuron, pyrazon, diphenamid, chlorthal-dimethyl; persistence of herbicides in decreasing order: diuron, bromacil, simazine, neburon, fluometuron, trifluralin, prometryne; control produced by pyrazon improved with the number of applications, but that of diphenamid and chlorthal-dimethyl remained weak and short
REFERENCE: Horowitz, M., T. Blumenfeld, G. Herzlinger, and N. Hulin, "Effects of Repeated Applications of Ten Herbicides on Weed Population, Residue Accumulation and Nitrification," Weed Res. 14(2):97-109 (1974).

<4377>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Grasses
EXPERIMENTAL DOSE: 3.2 and 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 37-50 gal/A
EXPERIMENTAL CONDITIONS: Field study; 3 locations (FL); time period--1971 and 1972; evaluation time--8 to 26 wks
EFFECTS: Moderate control of weeds
COMMENTS: Combinations of diuron or simazine plus 2 applications of dalapon, 2 applications of dalapon alone or single applications of glyphosate provided best grass control; in addition, bahiagrass controlled with oxadiazon and asulam
REFERENCE: Arnold, C.E. and J.B. Aitken, "Perennial Grass Control in Pecan Orchards," Proc. South. Weed Sci. Soc. 26:231-235 (1973).

<4378>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.2, 0.4, 0.8, 1.6 and 2.4 ppm
APPLICATION METHODS: Preplanting application
EXPERIMENTAL CONDITIONS: Pot studies; styrofoam cups filled with 6 oz of treated soil--4 seeds planted per cup; injury assessed after 12 days; untreated soil as control
EFFECTS: No apparent injury at 0.2 and 0.4 ppm; 0.8 ppm caused some phytotoxicity--vein clearing beginning at base of cotyledon and fanning toward leaf margin; 1.6 and 2.4 ppm caused 60% plant death
COMMENTS: Study was promoted by poor ornamental plant growth on soil where asparagus fern previously grew; residual diuron apparently caused poor ornamental growth; addition of charcoal to soil nullified residual herbicide effect
REFERENCE: Elmstrom, G.W., "Inactivation of Residual Herbicide in an Abandoned Fernery," Fl. State Hort. Soc. 85:414-415 (1972).

<4379>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preemergence sprinkle
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Miller Clay; flat culture
EFFECTS: No adverse effect
COMMENTS: Any of chemicals could cause deleterious effects on growth of seedling cotton; UC 21149 employed safely in combination with herbicides Dacthal, diuron, chloro-IPC, and trifluralin
REFERENCE: Boling, J. C. and J. Hacskaylo, "Effect of the Systemic Insecticide UC 21149 and Four Pre-Emergence Herbicides on Cotton Seedlings," J. Econ. Ent. 59(4):1026-1027 (1966).

<4380>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.56 kg/ha
APPLICATION METHODS: Postemergence spray; 374 l./ha; 0.5% blended surfactant; one, two, or three applications made four, eight, or twelve weeks after cotton emergence
EXPERIMENTAL CONDITIONS: Field study; soil--dry mulch; preplant application of bensulide or trifluralin; directed postemergence application of diuron prior to test applications; time period--1971 through 1974; evaluation time--harvest
EFFECTS: Seed cotton yield reduced
COMMENTS: DSMA and MSMA applied 4 or 8 weeks after emergence had less effect on cotton yield, boll components, and fiber properties than applications made 12 weeks after emergence; most single, over-the-top applications of DSMA, fluometuron, or DSMA with fluometuron 4 weeks after emergence did not affect cotton yield, boll components, or fiber properties
REFERENCE: Arle, H.F. and K.C. Hamilton, "Over-the-Top Applications of Herbicides in Cotton," Weed Sci. 24(2):166-169 (1976).

<4381>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Paragrass (PANICUM PURPURASCENS)
EXPERIMENTAL DOSE: 6.0 lb/A; 80% WP
APPLICATION METHODS: Postemergence spray; 25 gal/A; up to three repeat applications
EXPERIMENTAL CONDITIONS: Field study; soil--Humatas clay loam; evaluation time--up to 20 wk; clipped or non-clipped paragrass plots treated; combined applications
EFFECTS: No visible effect
COMMENTS: Spray applied to regrowth generally gave better control for longer periods; best control obtained with dalapon + TCA applied twice; low rate initially and one-half rate at repeat application fully as effective as higher rate tested; dalapon alone nearly as effective as dalapon + TCA combination on both older growth and regrowth
REFERENCE: Whitney, A. S., A. V. Ramos, and A. S. Rios, "Chemical Control of Paragrass (BRACHIARIA MUTICA) in a Humid Upland Area," J. Agr. Univ. P. R. 57(2):129-135 (1973).

<4382>
<4382>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Bromegrass, smooth (BROMUS INERMIS); Grama, sideoats (BOUTELOUA CURTIPENDULA); Indian grass (SORGHASTRUM NUTANS); Switchgrass (PANICUM VIRGATUM); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.1, 3.4, and 7.8 kg/ha
APPLICATION METHODS: Postemergence spray; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Sharpsburg silty clay loam; forage grasses treated and soil at different depths (0-8, 8-15, and 15-30 cm) removed at different times (4 and 16 mos) for greenhouse bioassay using soybean
EFFECTS: Generally moderate growth reduction at all rates of soybean only from soil at 0-8 cm depth and only at 4 mos with smooth brome injury at 7.8 kg/ha and no damage to remaining forage grasses
COMMENTS: Most herbicide residues 4 or 16 months after application located in the 0- to 8-cm soil depth; only bromacil, or terbacil at high rates depressed soybean growth in soil from the 8- to 15-cm depth
REFERENCE: Morrow, L.A. and M.K. McCarty, "Selectivity and Soil Persistence of Certain Herbicides Used on Perennial Forage Grasses," J. Envir. Qual. 5(4):462-465 (1976).

<4383>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Pea, sweet (PISUM SATIVUM); Amaranth (AMARANTHUS VIRIDIS); (DIGERA ARVENSIS); (BOERHAAVIA DIFFUSA); (BOERHAAVIA REPANDA); Dayflower (COMMELINA BENGHALENSIS); (PENNISETUM TYPHOIDES); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0, 10.0, and 100 ppm
APPLICATION METHODS: Postemergence spray to runoff
EXPERIMENTAL CONDITIONS: greenhouse study (presumed); pot culture
EFFECTS: Moderate to severe damage to all plants except A. VIRIDIS, B. DIFFUSA, and C. ROTUNDUS (no damage)
COMMENTS: Triazine and urea herbicides caused appreciable stimulation of stomatal opening within two hours; amides caused rapid closure of open stomata; thiocarbamates caused differential response
REFERENCE: Rama Das, V.S. and M. Santakumari, "Stomatal Behaviour Towards Four Classes of Herbicides as a Basis of Selectivity to Certain Weeds and Crop Plants," Proc. Indian Acad. Sci. 82B(3):108-116 (1975).

<4384>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Pondweed, sago (POTOMOGETON PECTINATUS); Pondweed, American (POTOMOGETON NODOSUS); Pondweed, curly-leaf (POTOMOGETON CRISPUS); Pondweed (POTOMOGETON PERFOLIATUS); (CHARA VULGARIS); Naiad (NAJAS MINOR); (HYDRILLA VERTICILLATA); Hornwort (CERATOPHYLLUM DEMERSUM); Water celery (VALISNERIA SPIRALIS); Linseed (LINUM USITATISSIMUM); Mustard (BRASSICA CAMPESTRIS); Gram (CICER ARIETINUM); Clover, Egyptian (TRIFOLIUM ALEXANDRINUM); Coriander (CORIANDRUM SATIVUM); Wheat (TRITICUM AESTIVUM); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 45 kg/ha
APPLICATION METHODS: Broadcast; WP; into water
EXPERIMENTAL CONDITIONS: Application in stagnant and flowing water, stagnant water--pH-7.6, air temp--21 C, water temp--18 C; flowing water--velocity 0.4 km/hr, pH-8.0; air temp--28 C; water temp--22 C; conductivity--0.3 mmhos/cm; evaluation time--one and 8 or 9 wk; treated water used to irrigate crop plots
EFFECTS: Moderate to effective control of all water weeds except P. NODOSUS and HYDRILLA; rice was the only crop plant affected
COMMENTS: Of 5 herbicidal treatments employed, chlorothiamid, endothall and 2,4-D killed all submerged water weeds; all crop plants resistant to herbides except gram (susceptible to endothall, dipot.) and rice (susceptible to diuron)
REFERENCE: Datta, T.R., J. Prasad, and R.P. Singh, "Evaluation of Herbicides for Submerged Weeds in Chambal and Bhakra-Nangal Canal Systems," Indian J. Agric. Sci. 42(1):70-75 (1972).

<4385>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preplant non-incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: At 1.0 lb/A, effective control of grass weeds and slight control of broadleafs with slight damage of soybeans, moderate damage of corn (one year), and no damage of cotton
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but fairly safe on corn; MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(isopropylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<4386>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.5 to 6.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: No control of weeds or adverse effect on cotton

<4386> CONT.
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<4387>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Alfalfa (MEDICAGO SATIVA); Cabbage (BRASSICA OLERACEA); Lettuce (LACTUCA SATIVA); Beet, sugar (BETA VULGARIS); Soybean (GLYCINE MAX); Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1.8 kg/ha
APPLICATION METHODS: Soil incorporation; disking to 15 cm depth
EXPERIMENTAL CONDITIONS: Field study; herbicides applied at six-month intervals at two locations; soils--Mesa and Yuma, AZ; crops planted at 24, 18, 12, 6, and 0 intervals after herbicide applications; residual effects studied after fallow periods
EFFECTS: Persisted for 24 mos and adversely affected all crops but considerably less damage to crops in Yuma
COMMENTS: Herbicides can persist for 2 years or more in fallow desert soils and affect susceptible crops; considerable differences observed with two soil types; considerable differences in crop susceptibility
REFERENCE: Hamilton, K.C. and H.F. Arle, "Persistence of Herbicides in Fallow Desert Cropland," Weed Sci. 20(6):573-576 (1972).

<4388>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Bromegrass, downy (BROMUS TECTORUM); Bromegrass, smooth (BROMUS INERMIS)
EXPERIMENTAL DOSE: 1.0 to 3.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 or 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; 2 locations in WA; time period--1958 to 1960
EFFECTS: At 3.0 lb rate, moderate control of downy brome with no adverse effect on smooth brome seed yield
COMMENTS: IPC and CIPC most effective herbicides for controlling downy brome without serious injury to perennial grasses grown for seed production; endothal gave good downy brome control
REFERENCE: Canode, C.L., W.C. Robocker, and T.J. Muzik, "Grass Seed Production as Influenced by Chemical Control of Downy Brome," Weeds 10(3):216-219 (1962).

<4389>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<4390>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 0.12, 0.25, 0.50, and 1.00 lb/A; 0.5% surfactant
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: Effective crabgrass control at 0.25 and higher rates; WP and suspension formulations equal in effectiveness
COMMENTS: Of five phenylureas, diuron was most active as foliar spray on young crabgrass; liquid and wettable powder formulations performed equally well; addition of surfactants to aqueous suspensions of diuron greatly enhanced herbicidal activity in greenhouse and field experiments
REFERENCE: McWhorter, C.G. and T.J. Sheets, "The Effectiveness of Five Phenylureas as Foliar Sprays and the Influence of Surfactants on Their Activity," Proc. Southern Weed Conf. 14:54-59 (1961).

<4391>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Grasses; Broadleaf weeds; Lupine, narrow-leaf (LUPINUS ANGUSTIFOLIUS)
EXPERIMENTAL DOSE: 0.4, 0.8, 1.3, and 2.4 kg/ha
APPLICATION METHODS: Preemergence spray; surface applied immediately after seeding; 80% WP; 100-200 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--7 types; 18 locations in western Australia; time period--1972 to 1974
EFFECTS: Significant yield reductions at one site (non-significant reductions at others) with moderate control of annual grass weeds (0.8 kg/ha and higher) and effective control of broadleafs at 1.3 and 2.4 kg/ha

<4391>
<4391> CONT.
COMMENTS: Significant yield increases obtained on at least one occasion with alachlor, diuron, linuron, simazine, and trifluralin; diuron, linuron, and simazine each resulted in significant lupin yield reduction on one occasion
REFERENCE: Allen, J.M., "2. The Response of Narrow-Leafed Lupins to Preemergence Herbicides," Aust. J. Exp. Agric. Anim. Husb. 17(84):118-125 (1977).

<4392>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
PLANT: Waterweed, Brazilian (ANACHARIS DENSA)
EXPERIMENTAL DOSE: 5, 10, and 100 ppm
APPLICATION METHODS: Addition of solutions to jars in which plants were growing
EXPERIMENTAL CONDITIONS: Laboratory study; plants rooted for 2 wk before treatment solutions added; evaluation time--up to 21 days
EFFECTS: Moderate control after 21 days at 100 ppm
COMMENTS: Brief description of laboratory method for screening water weed herbicides
REFERENCE: Hardcastle, W.S., "A Rapid Laboratory Method for Screening Herbicides against Aquatic Plants," Weeds 6(1):64-65 (1958).

<4393>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: DCMU
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 500 micro M
APPLICATION METHODS: Addition to assay preparations of chloroplasts
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: Increased photochemical activity and chloroplast bleaching
COMMENTS: Dual wavelength spectrophotometry applied to observations of small spectral changes during biochemical reactions in intact tissue; based on principle that absorbance reading at wavelength of isobestic point of reaction fluctuates with time in same manner as reading at wavelength where an absorbance change due to reaction takes place
REFERENCE: Inoue, Y., Yaginuma, N., Ogawa, T., Konishi, K., and K. Shibata, "Spectral Changes of Chloroplasts as a Means to Examine Phytotoxic Effects of Herbicides," in Environmental Toxicology of Pesticides, F. Matsumura, G.M. Boush, and T. Misato (Eds.) Academic Press, New York and London, pp. 549-570 (1972).

<4394>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 20.0 and 40.0 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Killed at both rates
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most common phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<4395>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Azalea (RHODODENDRON INDICUM); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 2.0 lb/A; vermiculite carrier
APPLICATION METHODS: Broadcast
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective weed control with no adverse effect on azalea
COMMENTS: PCP, DN, and CIPC superior at high rates against summer weeds in azalea beds, whereas fall weeds best controlled by CIPC, diuron, Geigy 444, and CDEC, no apparent foliar or other damage resulted from any treatments
REFERENCE: Chappell, W.E., "The Use of Granular Herbicides in Azaleas," Proc. Southern Weed Conf. 10:105-107 (1957).

<4396>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sowthistle, perennial (SONCHUS ARVENSIS)
EXPERIMENTAL DOSE: 0.33 lb/sq rd
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; combinations of herbicide treatments, seasonal application, cultivation, and cropping investigated over 3 yr period (1955-1957)
EFFECTS: Effective thistle control with 3-plus years residual effect
COMMENTS: Canada thistle and perennial sowthistle reacted to 2,4-D and MCPA; ester and amine forms of 2,4-D equally effective for sowthistle, while both and MCPA equal for Canada thistle; both herbicides prevent seed production, kill susceptible plants and weaken resistant plants
REFERENCE: Derscheid, L.A., R.L. Nash, and G.A. Wicks, "Thistle Control With Cultivation, Cropping and Chemicals," Weeds 9(1):90-102 (1961).

<4397>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Ginger (ZINGIBER OFFICINALE); (ACHYRANTHES INDICA); Spurge (EUPHORBIA sp.); Nutsedge, purple (CYPERUS ROTUNDUS); (PHYLLANTHUS AMARUS); (SORGHUM VERTICILLIFLORUM); (KALLSTROEMIA MAXIMA); Windmill grass (CHLORIS RADIATA)
EXPERIMENTAL DOSE: 1.6 kg/ha
EXPERIMENTAL CONDITIONS: Single trial
EFFECTS: Herbicide safe to yellow ginger; good weed control to nine weeks
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<4398>
CHEMICAL NAME: Urea, N'-(3,4-dichlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Diuron
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.65 to 5.86 (negative logarithm) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<4399>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 50 gal at 30 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1969 to 1971
EFFECTS: Effective control in preemergence application of broadleafs and moderate control of grass weeds with insignificant potato yield reduction
COMMENTS: All treatments rated good to excellent in broadleaf weed control; all chemical treatments equal or superior to cultivation in control of broadleaf weeds
REFERENCE: Swingle, H.D. and C. Mullins, "Herbicide Trials with Irish Potatoes," Proc. S. Weed Sci. Soc. 26:256-258 (1973).

<4400>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Nutsedge (CYPERUS sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Pigweed (AMARANTHUS sp.); Pigweed, spiny (AMARANTHUS SPINOSUS); Jimsomweed (DATURA STRAMONIUM); Purslane, common (PORTULACA OLERACEA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 50% WP Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of broadleafs and grasses except nutsedge (no control) with good corn tolerance
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<4401>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Crabgrass (DIGITARIA sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA); Pigweed (AMARANTHUS sp.); Spanish needles (BIPENS BIPINNATA)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Postemergence spray; 40 gal/A at 25 psi; 50% WP Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective weed control except for sandbur and goosegrass (moderate control)
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<4402>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Broadleaf weeds; Grasses; Nutsedge, yellow (CYPERUS ESCULENTUS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preemergence spray; 38 gal/A at 20 psi; 50% WS formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective control of weeds except nutsedge (very slight control) at 4.0 lb/A rate with

<4402>
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slight reduction of potato yield
COMMENTS: Incorporated type treatments effective in giving season-long annual grass control, but pre-emergence treatments were not; EPTC only effective material on heavy stand of nutsedge
REFERENCE: Sanok, W.J., "Evaluation of Herbicides for Control of Weeds in Long Island Potatoes-1973," Proc. Northeast. Weed Sci. Soc. 28:282-286 (1974).

<4403>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 38 gal/A at 20 psi; 50% WP Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate weed control with no adverse effect on potato yield
COMMENTS: Metribuzin alone or in combination with other materials very effective in controlling barnyard grass and lady's thumb; other chemicals also effective in maintaining commercially acceptable weed control throughout season
REFERENCE: Sanok, W.J. and L.E. Weber, "Evaluation of Potato Herbicides on Long Island 1974," Proc. Northeast. Weed Sci. Soc. 29:316-318 (1975).

<4404>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 0.56 and 1.12 kg/ha; Adjuvan T surfactant (0.5%)
APPLICATION METHODS: Postemergence (early and late) spray; 188 l./ha (early) and 235 l./ha (late, directed spray); Adjuvan T surfactant (0.5%)
EXPERIMENTAL CONDITIONS: Field study; soil-Cecil sandy clay loam; time period--1969 to 1971
EFFECTS: Effective control of grasses with moderate control of broadleaf weeds and no adverse effect on sunflower
COMMENTS: Excellent grass control and poor broadleaf weed control obtained from early postemergence treatments of RP 17623 when applied as over-the-top spray at either cotyledon or first-leaf stage of sunflower growth, weed control results similar to RP 17623 from several herbicides applied as late-directed postemergence sprays; early postemergence treatments with RP 17623 caused some early injury to sunflower plants and reduction in achene oil percent when compared with achenes from untreated plants, but achene yields not reduced
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Postemergence on Weeds and Sunflowers," Crop Sci. 12(1):695-697 (1972).

<4405>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: WP formulation; spray applied in 40 gpa volume
EXPERIMENTAL CONDITIONS: Sassafras loam soil; plots--4 rows or 14 ft x 20 ft; randomized block design with 3 replications; May 24 planting and August 8 ratings and harvest; center 2 rows of each plot used for yield determination
EFFECTS: 84% broadleaf and 57% grass control at 1.5 lb/A; 87% broadleaf and 76% grass control at 2 lb/A; no significant effect on corn
COMMENTS: Chlorbromuron plus simazine gave as good or better weed control than chlorbromuron alone
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

<4406>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Potato (SOLANUM TUBEROSUM); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: WP treatments applied as sprays at 30 psi and 40 gpa volume
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications for each experiment; plot size--4 rows or 12 ft x 20 ft; Sassafras loam soil; center 2 rows harvested for yield determination
EFFECTS: 83% broadleaf and 54% grass control; no significant effect on potato yield when compared with cultivated control
COMMENTS: Combination with other herbicides increased weed control
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

<4407>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Soybean (GLYCINE MAX); Sesbania, hemp (SESBANIA EXALTATA); Mexicanweed (CAPERONIA CASTANAEFOLIA); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 2.24 and 3.36 kg/ha
APPLICATION METHODS: Preemergence spray; 2.0 m swath
EXPERIMENTAL CONDITIONS: Field study; soil--heavy clay; evaluation time--2 or 6 wk
EFFECTS: Slight damage to soybean and moderate control of weeds
COMMENTS: Linuron or metribuzin resulted in good control of hemp sesbania and mexicanweed; no preemergence herbicide tested gave good morningglory control, but metribuzin and RP-17623 resulted in fair control
REFERENCE: Eastin, E.F., "Control of Problem Weeds in Texas Soybeans," Proc. South. Weed Sci. Soc. 26:67-73 (1973).

<4408>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorobromuron
PLANT: Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays; 60 gal/A; applied singly and in combination in some instances
EXPERIMENTAL CONDITIONS: Field study; no cultivation
EFFECTS: Active against all grasses tested
COMMENTS: Postemergence treatments generally less effective on crabgrass and panicum and more effective on foxtails; sometimes only 2 or 3 plant species tested
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

<4409>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorobromuron
PLANT: Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 3.36 kg/ha
APPLICATION METHODS: Preemergence treatment in spray volume of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: 75% weed control 25 days after treatment
COMMENTS: Hophornbeam copperleaf--southwestern weed prevalent in peanuts
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<4410>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence applications principally, but some postemergence applications (alachlor, cyprazine, and cyanazine); 60 gal/A; 40 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1970 to 1972
EFFECTS: Effective control of yellow foxtail; moderate control of fall panicum
COMMENTS: Preemergence herbicides which controlled large crabgrass also controlled fall panicum; these included: alachlor, linuron, cyanazine and prynachlor; herbicides which did not control large crabgrass and fall panicum included atrazine, cyprazine and dicamba
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

<4411>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Plants; Potato (SOLANUM TUBEROSUM); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A; 50% WS
APPLICATION METHODS: Postemergence, preemergence, and preplant incorporated sprays; 38 gal/A; 20 psi; granular materials applied with cone-type applicator; varied combined treatments evaluated
EXPERIMENTAL CONDITIONS: Field study; three locations; rye cover crop after harvest
EFFECTS: Slight-moderate control of weeds in preemergence applications with slight leaf necrosis of potato and no effect on rye; similar results in postemergence applications
COMMENTS: Most treatments did not result in commercially acceptable control levels because of a number of conditions which reduced effectiveness of weed control in 1972
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<4412>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 3.0 lb/A; WP
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 40 gal/A; 730616 TeeJet spray tip at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Moderate control of weeds with no adverse effect on potatoes

<4412>
<4412> CONT.
COMMENTS: Preplant incorporated herbicides R-7465, EPTC, and vernolate good single herbicides; increases in herbicidal effectiveness obtained when EPTC and vernolate combined with R-7465; alachlor alone excellent herbicide applied preemergence; increased weed control effectiveness resulted when this herbicide combined with linuron, chlorbromuron, metobromuron, methazole, or dinoseb
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

<4413>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Broadleaf weeds; Grasses; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A; WP
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Sassafras loam
EFFECTS: Moderate control of weeds with no adverse effects on corn
COMMENTS: Effective combinations were alachlor + atrazine, prynachlor + atrazine, chlorbromuron + atrazine, and chlorbromuron + simazine; atrazine slightly more effective than simazine
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

<4414>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Potato (SOLANUM TUBEROSUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 2 and 3 lb/A
APPLICATION METHODS: Spray applied at 20 psi pressure and 38 gal/A volume; preemergence application
EXPERIMENTAL CONDITIONS: April planting; plots--2 rows wide by 30 ft long; randomized complete block design; treatments replicated five times in experiments 1 and 3 and four times in others; total of 5 experiments; rye seeded following potato harvest
EFFECTS: Slight necrosis of leaf margins and chlorosis of potato at 3 lb/A; commercially unacceptable weed control; no effect on rye
COMMENTS: Author notes that growing conditions (cool spring and high June rainfall) caused vigorous weed growth and retarded potato growth, thus reason for commercially unacceptable weed control; herbicide combinations also discussed
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<4415>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Broadleaf weeds; Grasses; Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.75 to 2.00 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of broadleafs at all rates with less effective control of grasses and slight injury to potato at 1.75 and 2.00 lb/A rates
COMMENTS: Chlorbromuron and linuron gave effective control of broad-leaved perennial weed species growing in white potatoes; late season annual grass control attained only by combining alachlor with chlorbromuron and linuron
REFERENCE: Murphy, H.J., "Effect of Combinations of Chlorbromuron and Linuron with Alachlor on Yield and Weed Control in White Potatoes in Maine," Proc. Northeast. Weed Sci. Soc. 28:299-302 (1974).

<4416>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Grasses
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Effective control of all weeds except quackgrass with no adverse effect on potato yield
COMMENTS: Metolachlor applied preemergence and penoxalin applied layby did not provide satisfactory control of broadleaved weeds; none of the drag-off treatments with dinitramine, USB-3153, or trifluralin controlled broadleaved weeds; USB-3153 and trifluralin applied at drag-off did not give satisfactory control of quackgrass
REFERENCE: Murphy, H.J. and T. Gajewski, "Effect of Several Herbicides Applied Preemergence, at Drag-Off and Layby on Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 31:176-179 (1977).

<4417>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1.0 and 2.0 lbA
APPLICATION METHODS: Preemergence spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--gravelly silt loam
EFFECTS: At 2.0 lb/A, slight to moderate control of weeds with no adverse effect on potato yield
COMMENTS: EPTC and profluralin applied preplant incorporated provided full season control of annual barnyard

<4417> CONT.
grass in potatoes; either compound when combined with preemergence herbicides linuron, chlorbromuron, or DNBP provided full season control of BRASSICA NIGRA, BRASSICA CAMPESTRIS, POLYGONUM PERSICARIA, and CHENOPODIUM ALBUM
REFERENCE: Murphy, H.J., "Effect of Several Combinations of Preplant Incorporated and Preemergence Herbicides on Weed Control in Potatoes," Proc. Northeast. Weed Sci. Soc. 29:281-283 (1975).

<4418>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Panicum, fall (PANICUM DICHOTOMIFLORUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold sandy loam; evaluation time--approx. 2 mos; corn harvested at maturity for yield data
EFFECTS: Moderate to effective control of all weeds except crabgrass and morningglory which were poorly controlled; no or slight effect on 4 corn varieties except seneca for which there was reduced yield
COMMENTS: Seneca Chief most susceptible variety to yield reductions particularly from poorer herbicide treatments; all varieties showed injury from metribuzin; the best herbicide treatment was alachlor + MC 4379 80W
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "The Response of Several Sweet Corn Varieties to Various Herbicides and Herbicide Combinations," Proc. Northeast. Weed Sci. Soc. 28:175-181 (1974).

<4419>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Velvetleaf (ABUTILON THEOPHRASTI); Potato (SOLANUM TUBEROSUM); Foxtail (SETARIA sp.)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Preemergence spray; 363 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras sandy loam; evaluation times--2 and 3 mos
EFFECTS: Effective weed control with no effect on potato yield at both rates
COMMENTS: Chlorbromuron and metribuzin controlled weeds comparably to standard linuron; alachlor alone not effective but very effective used in combination with chlorbromuron, metribuzin, and linuron; postemergence application of metribuzin very phytotoxic to potatoes and weeds
REFERENCE: Henne, R.C. and R.T. Guest, "Alachlor, Chlorbromuron, and Metribuzin for Weed Control in Potatoes," Proc. Northeast. Weed Sci. Soc. 28:296-298 (1974).

<4420>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Soybean (GLYCINE MAX); Sida, spiny (SIDA SPINOSA)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--Loring silt loam and Collins silt loam; preplant soil incorporation of herbicides not effective for prickly sida; evaluation times--3 wk (preemergence) and 2 wk (postemergence)
EFFECTS: Slight vigor reduction in soybean, effective control of sida
COMMENTS: Chlorbromuron provided better control of prickly sida than did linuron which was more consistently effective than naptalam plus dinoseb; chlorbromuron applied as preemergence treatment caused slight crop injury; in most cases preemergence treatments followed by cultivation were effective in providing season-long control; descending order of effectiveness for prickly sida control by the postemergence herbicides was: chlorbromuron, metribuzin, prometryne, dinoseb
REFERENCE: Jeffery, L.S., J. Connell, T. McCutchen, and J.R. Overton, "Response of Prickly Sida and Soybeans to Various Herbicides," Weed Sci. 24(2):202-204 (1976).

<4421>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Soybean (GLYCINE MAX); Sida, spiny (SIDA SPINOSA)
EXPERIMENTAL DOSE: 0.56 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--Loring silt loam and Collins silt loam; preplant soil incorporation of herbicides not effective for prickly sida; evaluation times--3 wk (preemergence) and 2 wk (postemergence)
EFFECTS: Very slight reduction in vigor of soybean and effective control of sida
COMMENTS: Chlorbromuron provided better control of prickly sida than did linuron which was more consistently effective than naptalam plus dinoseb; chlorbromuron applied as preemergence treatment caused slight crop injury; in most cases preemergence treatments followed by cultivation were effective in providing season-long control; descending order of effectiveness for prickly sida control by the postemergence herbicides was: chlorbromuron, metribuzin, prometryne, dinoseb
REFERENCE: Jeffery, L.S., J. Connell, T. McCutchen, and J.R. Overton, "Response of Prickly Sida and Soybeans to Various Herbicides," Weed Sci. 24(2):202-204 (1976).

<4422>
<4422>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Soybean (GLYCINE MAX); Jimsonweed (DATURA STRAMONIUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Post directed spray at 280.5 l./ha to lower 1/3 of soybean plant in 30 cm bands; surfactant Adjuvan-T at 0.5% (v/v) added
EXPERIMENTAL CONDITIONS: Mattapex silt loam; randomized complete block design with 4 replications; jimsonweed 25 to 30 cm tall at application
EFFECTS: Commercially unacceptable jimsonweed control; good pigweed control
COMMENTS: No reported soybean injury
REFERENCE: Parochetti, J.V., "Postemergence and Postdirected Broadleaved Weed Control for Soybeans," Proc. Northeast. Weed Sci. Soc. 27:75-79 (1973).

<4423>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Fair sesame tolerance and erratic barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<4424>
CHEMICAL NAME: Urea, N'-(4-bromo-3-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Chlorbromuron
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Moderate control of weeds with no adverse effect on peanuts
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit futher testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<4425>
CHEMICAL NAME: Urea, N'-(4-bromophenyl)-N-methoxy-N-methyl
CHEMICAL COMMON NAME: Metobromuron
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 50 gal at 30 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1969 to 1971
EFFECTS: Effective control in preemergence application of broadleafs and moderate control of grass weeds with insignificant potato yield reduction
COMMENTS: All treatments rated good to excellent in broadleaf weed control; all chemical treatments equal or superior to cultivation in control of broadleaf weeds
REFERENCE: Swingle, H.D. and C. Mullins, "Herbicide Trials with Irish Potatoes," Proc. S. Weed Sci. Soc. 26:256-258 (1973).

<4426>
CHEMICAL NAME: Urea, N'-(4-bromophenyl)-N-methoxy-N-methyl
CHEMICAL COMMON NAME: Metobromuron
PLANT: Plants; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 2.8 and 5.6 kg/ha
APPLICATION METHODS: Preemergence spray; 1000 l./ha; incorporated by raking (trifluralin) or sprinkler irrigation
EXPERIMENTAL CONDITIONS: Field study; time period--1973 and 1974; Lebanon
EFFECTS: Moderate weed control and reduced potato yield
COMMENTS: Weedy check plots caused reduction of 58% of potato tuber yield as compared to all season weed-free conditions; all herbicides tested reduced oven dry weight of weeds by 55-92% as compared to unweeded control plots; only napropamide and fluchloralin gave significantly higher potato tuber yields
REFERENCE: Saghir, A.R. and G. Markoullis, "Effects of Weed Competition and Herbicides on Yield and Quality of Potatoes," Proc. 12th. Br. Weed Cont. Conf. 2:533-539 (1974).

<4427>
CHEMICAL NAME: Urea, N'-(4-bromophenyl)-N-methoxy-N-methyl
CHEMICAL COMMON NAME: Metobromuron
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo

<4427> CONT.
EFFECTS: Moderate to effective control of weeds and slight vigor reduction in peanut
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit futher testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<4428>
CHEMICAL NAME: Urea, N'-(4-bromophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Metobromuron
PLANT: Groundnut (PANAX TRIFOLIUM); (PANICUM ZIZANOIDES); (SORGHUM VERTICILLIFLORUM); (PHYLLANTHUS AMARUS); Nutsedge, purple (CYPERUS ROTUNDUS); (LAGASCEA MOLLIS); Spurge (EUPHORBIA sp.); (KALLSTROEMIA MAXIMA); Sandbur (CENCHRUS ECHINATUS); Morningglory (IPOMOEA sp.)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Field experiment
EFFECTS: High groundnut yields; weed control not good at 42 days
COMMENTS: Effect on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<4429>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N-methoxy-N-methyl-
CHEMICAL COMMON NAME: Monolinuron
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 0.24 to 0.34 kg/ha
APPLICATION METHODS: Addition to soil; laboratory sprayer; 413 l./ha at 2.11 kg/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soils-- Bledington and Boddington Barn; pot culture; temperature--13 to 23 C; pH--6.3 or 6.9 or 7.3
EFFECTS: Growth reduction of ryegrass with no difference as a result of liming
COMMENTS: Metoxuron, fenuron, metribuzin, and fluometuron more active in Boddington Barn soil than in Bledington soil; prometryne similar in effect in both soils
REFERENCE: Richardson, W.G. and J.D. Banting, "The Phytotoxicity of Various Herbicides in Two Sandy Loam Soils and the Effect of Liming," Weed Res. 17(3):203-207 (1977).

<4430>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Monuron
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Plants
EXPERIMENTAL DOSE: 2.0, 4.0, and 6.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; time period--1967 to 1969; soils--Ramona sandy loam and Greenfield
EFFECTS: Effective control of all weeds at 2.0 and 4.0 lb/A with moderate damage to asparagus
COMMENTS: Chemicals which killed or severely damaged asparagus include monuron, diuron, simazine, sinbar, sindone-B, treflan, tenoran, and CIPC; vegiben marginal; of herbicides tested in these trials for pre-emergence weed control in direct-seeded asparagus, balan, bensulide, and brominal offer most promising results
REFERENCE: Whiting, F.L., F.H. Takatori, and J.M. Lyons, "Weed Control in Asparagus," Calif. Agric. 25(1):4-5 (1971).

<4431>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Monuron
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Soil (50 g) containing herbicides added to surface of soil in which apple trees were growing
EXPERIMENTAL CONDITIONS: Environmental chamber; light intensity--21.6 klux; photoperiod--15 hr; temperature--21 C (day) and 16 C (night)
EFFECTS: Reduced photosynthesis and growth
COMMENTS: Monuron caused greatest decrease in photosynthesis, followed by atrazine and simazine, diuron had no effect on photosynthesis; monuron and atrazine applications resulted in decreased plastochron index; influence of herbicides on photosynthesis apparent 10 days following treatment; effect persisted for remainder of experimental period of 40 days
REFERENCE: Sharma, D.P., D.C. Ferree, and F.O. Hartman, "Effect of Some Soil Applied Herbicides on Net Photosynthesis and Growth of Apple Trees," Hortscience 12(2):153-154 (1977).

<4432>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Monuron
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in all plants at 1 and 10 ppm; shoot--less than 50% inhibition in

<4432>
<4432> CONT.
sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<4433>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Monuron
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.5 to 6.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: No control of weeds or adverse effect on cotton
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<4434>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Monuron
PLANT: Bromegrass, downy (BROMUS TECTORUM); Wheatgrass, intermediate (AGROPYRON INTERMEDIUM); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.0 to 8.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 or 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; 2 locations in WA; time period--1958 to 1960
EFFECTS: At 4.0 lb rate, effective downy brome control but moderate damage to wheatgrass; no adverse effect on bluegrass seed yield at 2.0 lb rate
COMMENTS: IPC and CIPC most effective herbicides for controlling downy brome without serious injury to perennial grasses grown for seed production; endothal gave good downy brome control
REFERENCE: Canode, C.L., W.C. Robocker, and T.J. Muzik, "Grass Seed Production as Influenced by Chemical Control of Downy Brome," Weeds 10(3):216-219 (1962).

<4435>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Monuron
PLANT: Plants
EXPERIMENTAL DOSE: 7.5 lb/ft mi (ft mi x 8.25= lb/A)
APPLICATION METHODS: Spray with asphalt nozzles
EXPERIMENTAL CONDITIONS: Field study; applied to road shoulders just prior to laying asphalt
EFFECTS: Effective control of weeds
COMMENTS: Herbicides useful in reducing cost of maintaining asphalt pavements; presurface application can be expected to give adequate vegetation control at least during season of treatment; post-surface applications required later to prevent encroachment by Bermudagrass from adjacent unpaved areas
REFERENCE: Pruett, L.J. and W.G. McCully, "Presurface Applications of Herbicides for Highways," Down to Earth 17(3):11-12 (1961).

<4436>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Monuron
PLANT: Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 0.12, 0.25, 0.50, and 1.00 lb/A; 0.5% surfactant
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: Effective control at 0.5 and 1.0 lb rates
COMMENTS: Of five phenylureas, diuron was most active as foliar spray on young crabgrass; liquid and wettable powder formulations performed equally well; addition of surfactants to aqueous suspensions of diuron greatly enhanced herbicidal activity in greenhouse and field experiments
REFERENCE: McWhorter, C.G. and T.J. Sheets, "The Effectiveness of Five Phenylureas as Foliar Sprays and the Influence of Surfactants on Their Activity," Proc. Southern Weed Conf. 14:54-59 (1961).

<4437>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
PLANT: Waterweed, Brazilian (ANACHARIS DENSA)
EXPERIMENTAL DOSE: 5, 10, and 100 ppm
APPLICATION METHODS: Addition of solutions to jars in which plants were growing
EXPERIMENTAL CONDITIONS: Laboratory study; plants rooted for 2 wk before treatment solutions added; evaluation time--up to 21 days
EFFECTS: No control
COMMENTS: Brief description of laboratory method for screening water weed herbicides
REFERENCE: Hardcastle, W.S., "A Rapid Laboratory Method for Screening Herbicides against Aquatic Plants," Weeds 6(1):64-65 (1958).

<4438>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Monuron
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 0.4 to 819.2 ppmw (of soil)
APPLICATION METHODS: Added to soil in water solutions
EXPERIMENTAL CONDITIONS: Greenhouse study; soils--Yolo fine sandy loam, Yolo clay loam, and Egbert loam; persistence studied in container culture in which oats indicator plant was planted, harvested, replanted, etc on 4 to 8 wk cycle
EFFECTS: At 1.6 ppmw and higher concentrations, persisted for 2 or more planting cycles
COMMENTS: Initial toxicity in order of decreasing toxicity was: fenuron and monuron, CIPC, dalapon and TCA, GMIPC, and TBA; comparative inactivation in order of most rapid to slowest inactivation, was; TCA, dalapon, CIPC, CMIPC, TBA, fenuron, and monuron
REFERENCE: Crafts, A.S. and H. Drever, "Experiments with Herbicides in Soils," Weeds 8(1):12-18 (1960).

<4439>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Monuron
PLANT: Thistle, Canada (CIRSIUM ARVENSE); Sowthistle, perennial (SONCHUS ARVENSIS)
EXPERIMENTAL DOSE: 0.33 lb/sq rd
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; combinations of herbicide treatments, seasonal application, cultivation, and cropping investigated over 3 yr period (1955-1957)
EFFECTS: Effective thistle control with 3-plus years residual effect
COMMENTS: Canada thistle and perennial sowthistle reacted to 2,4-D and MCPA; ester and amine forms of 2,4-D equally effective for sowthistle, while both and MCPA equal for Canada thistle; both herbicides prevent seed production, kill susceptible plants and weaken resistant plants
REFERENCE: Derscheid, L.A., R.L. Nash, and G.A. Wicks, "Thistle Control With Cultivation, Cropping and Chemicals," Weeds 9(1):90-102 (1961).

<4440>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4441>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Monuron
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Oat (AVENA SATIVA); Oat (AVENA SATIVA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; time period--1962 to 1964; residue effect on subsequent crops (oats and soybean) studied after one and two years
EFFECTS: Moderate weed control with no adverse effect on asparagus and slight growth reduction of oats and soybean
COMMENTS: Simazine most effective for controlling annual weed species in asparagus; linuron, diphenamid, monuron, and DCPA controlled weed species; other herbicides tested less effective
REFERENCE: Sandhu, S.S. and J.K. Greig, "Effects of Herbicides on Asparagus and Weeds, and Residues Retained in the Soil," Am. Soc. Hort. Sci. 88:372-377 (1966).

<4442>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Monuron
PLANT: Bamboo (BAMBUSA ARUNDINACEA); Bamboo (BAMBUSA TEXTILIS); Bamboo (BAMBUSA TULDA); Bamboo, common (BAMBUSA VULGARIS); Bamboo (DENDROCALAMUS ASPER); Bamboo, solid (DENDROCALAMUS STRICTUS); Bamboo (GIGANTOCHLOA APUS); Bamboo, running type (PHYLLOSTACHYS BAMBUSOIDES); Bamboo (PHYLLOSTACHYS MEYERI); Bamboo (SINOCALAMOUS OLDHAMI)
EXPERIMENTAL DOSE: 0.4 to 1.6 lb/50 culms; 0.05% Tween-20
APPLICATION METHODS: Basal watering or foliage spray; 2 gal/50 culms
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Kill or moderate damage of all species
COMMENTS: Most effective treatments monuron, TCA, and dalapon to bases of intact or cut bamboo culms and amitrole as spray to regrowth foliage; combinations of herbicides found most effective on common bamboo, B. VULGARIS; for highly resistant species, second treatment necessary
REFERENCE: Cruzado, H.J., T.J. Muzik, and W.C. Kennard, "Control of Bamboo in Puerto Rico by Herbicides," Weeds 9(1):20-26 (1961).

<4443>
<4443>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Monuron
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Johnson grass (SORGHUM HALEPENSE); Bermudagrass, common (CYNODON DACTYLON); Quackgrass (AGROPYRON REPENS); Nutsedge (CYPERUS sp.); Fescue (FESTUCA PRATENSIS); Wheat (TRITICUM AESTIVUM); Timothy (PHLEUM PRATENSE); Sudan grass (SORGHUM VULGARE); Naiad, Southern (NAJAS GUADALUPENSIS); Harting grass; Orchard grass (DACTYLIS GLOMERATA); Foxtail (SETARIA sp.)
EXPERIMENTAL DOSE: 0.05 to 3.00 %
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Weed species killed at 0.5% and higher concentrations; crop plants killed at 0.25 and 0.50%
COMMENTS: Initial effect generally leaftip dieback, beginning on older leaves followed by progressive chlorosis and retardation of growth, ending in death of the plant; observations in field suggest strongly that monuron acts readily through root system and is translocated upward to leaves
REFERENCE: Bucha, H.C. and C.W. Todd, "3-(p-Chlorophenyl)-1,1-Dimethylurea - A New Herbicide," Sci. 114:493-494 (1951).

<4444>
CHEMICAL NAME: Urea, N'-(4-chlorophenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: Monuron
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.38 to 5.45 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<4445>
CHEMICAL NAME: Urea, N'-(4-cyclopropylphenyl)-N,N-dimethyl-
CHEMICAL COMMON NAME: PH 40-51
PLANT: Oat, wild (AVENA FATUA); Foxtail, slender (ALOPECURUS MYOSUROIDES); Bluegrass, annual (POA ANNUA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Campion (MELANDRIUM ALBUM); Bindweed, black (POLYGONUM CONVOLVULUS); Ladysthumb (POLYGONUM PERSICARIA); Chamomile, wild (MATRICARIA CHAMOMILLA); Galinsoga (GALINSOGA PARVIFLORA); Chickweed, common (STELLARIA MEDIA); Plantain, hoary (PLANTAGO MEDIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Nettle, stinging (URTICA URENS); Lamb's-quarters (CHENOPODIUM ALBUM); Cress, garden (LEPIDIUM SATIVUM); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE); Oat (AVENA SATIVA); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, 1.5, 2.0, 3.0, 4.0, and 6.0 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays using 1000 l./ha water
EXPERIMENTAL CONDITIONS: Greenhouse tests; comparisons made with methabenzthiazuron and metoxuron; postemergence weed exposure concentrations--0.25, 0.5, and 1.0 kg/ha; postemergence cereal exposure concentrations--1,2, and 4 kg/ha; preemergence exposure concentrations--1.5, 3.0, and 6.0 kg/ha
EFFECTS: Postemergence weed test--all weeds except A. MYOSUROIDES, E. CRUSS-GALLI, G. APARINE, and P. MEDIA severely damaged or killed at 0.5 and 1.0 kg/ha, A. MYOSUROIDES and P. MEDIA severely damaged at 1.0 kg/ha; postemergence crop test--minor damage to wheat, barley, and rice at 1.0 kg/ha, moderate damage to oats at 1.0 kg/ha, 4.0 kg/ha caused moderate damage to wheat and barley and severe damage to oats and rice; preemergence--moderate damage to A.FATUA at 6.0 kg/ha, severe damage to A. MYOSUROIDES and L. SATIVUM at 3.0 and 6.0 kg/ha
COMMENTS: Effective weed control at 1.5 to 2.0 kg/ha, excellent crop tolerance at 3.0 kg/ha
REFERENCE: Busschbach, E.J.V., J.J.V. Dallen, and J. Daams, "3-(4-cyclopropylphenyl)-1, 1-dimethylurea, a Selective Herbicide for Weed Control in Cereal Grains," J. Agric. Food Chem. 21(6):1055-1057 (1973).

<4446>
CHEMICAL NAME: Urea, N'-[3-chloro-4-(trifluoromethoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: BAY Kue-2236
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 1, 2 and 3 lb/A
APPLICATION METHODS: WP formulation; spray applied in 40 gpa volume
EXPERIMENTAL CONDITIONS: Sassafras loam soil; plots--4 rows or 14 ft x 20 ft; randomized block design with 3 replications; May 24 planting and August 8 ratings and harvest; center 2 rows of each plot used for yield determination
EFFECTS: 90% broadleaf and 60% grass control at 1.0 lb/A; 81% broadleaf and 84% grass control at 2 lb/A; 90% broadleaf and 83% grass control at 3 lb/A; vigor reduction in corn persisted throughout experiment--reduced corn yield
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

<4447>
CHEMICAL NAME: Urea, N'-[3-chloro-4-(trifluoromethoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Bay Kue 2236
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 lb/A; 80% WP
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: Effective control of weeds in pre- and postemergence applications; moderate injury and yield reduction of corn in postemergence application but none in preemergence
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<4448>
CHEMICAL NAME: Urea, N'-[3-chloro-4-(trifluoromethoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Bay Kue 2236
PLANT: Broadleaf weeds; Grasses; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.0, 2.0, and 3.0 lb/A; WP
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Sassafras loam
EFFECTS: Moderate control of weeds with reduced vigor of corn
COMMENTS: Effective combinations were alachlor + atrazine, prynachlor + atrazine, chlorbromuron + atrazine, and chlorbromuron + simazine; atrazine slightly more effective than simazine
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

<4449>
CHEMICAL NAME: Urea, N'-[3-chloro-4-(trifluoromethoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Bay Kue 2236
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence and postemergence applications; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (5-10-10) and diazinon (4.0 lb/A) applied before disking
EFFECTS: Preemergence--effective weed control, no corn injury; postemergence--slightly less effective than preemergence treatment, considerable corn injury
COMMENTS: Combination preemergence or postemergence treatments about as effective as herbicides alone
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<4450>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Soybean (GLYCINE MAX); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 1.68 kg/ha
APPLICATION METHODS: Soil incorporated by rototiller; injection; postemergence spray; 188 to 282 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy loam; herbicides studied either 2 or 3 years; combinations of herbicides evaluated also
EFFECTS: Moderate control of weeds with slight effect on soybean in postemergence application
COMMENTS: Vernolate injected into sandy loam soil controlled higher percentage of early weeds in soybeans in 2 years out of 3 when compared with incorporated vernolate at same rate by conventional methods; late season weed control was enhanced by split applications of herbicides applied postemergence in sequence with vernolate; chloroxuron applied early postemergence plus linuron or prometryne applied in split applications as late and layby treatments gave the best weed control.
REFERENCE: Johnson, B.J., "Response of Weeds and Soy Beans to Vernolate and Other Herbicides," Weed Sci. 19(4):372-377 (1971).

<4451>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Purslane, common (PORTULACA OLERACEA); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 3 and 6 lb/A
APPLICATION METHODS: Formulation -- 50% wettable powder; sprays applied in 50 gallon solution per acre; postplanting application
EXPERIMENTAL CONDITIONS: Chrysanthemums commercially grown two seasons on gravelly sandy loam; roots dipped in activated carbon to reduce herbicide injury to chrysanthemums
EFFECTS: 6 lb/A chloroxuron or 3 pounds/acre chloroxoron in combination with DCPA killed most seedlings of purslane and lambquarters; minor injury to newly planted chrysanthemums; supplementary treatment with 1 lb/A chloroxuron showed no injury to chrysanthemums; chrysanthemums exhibited temporary chlorosis
COMMENTS: During first growing season, flooding affected herbicide incorporation and chrysanthemum growth; no treatment controlled weeds all season without injury to chrysanthemums; use of multiple applications not thoroughly investigated; suggestions given for sequential herbicide use
REFERENCE: Ahrens, J.F., "Weed Control in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 28:386-394(1974).

<4452>
<4452>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate overall weed control and control of barnyard grass but effective control of purslane and pigweed with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<4453>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Plants
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; time period--1967 to 1969; soils--Ramona sandy loam and Greenfield
EFFECTS: Moderate to severe damage to asparagus
COMMENTS: Chemicals which killed or severely damaged asparagus include monuron, diuron, simazine, sinbar, sindone-b, treflan, tenoran, and CIPC; vegiben marginal; of herbicides tested in these trials for pre-emergence weed control in direct-seeded asparagus, balan, bensulide, and brominal offer most promising results
REFERENCE: Whiting, F.L., F.H. Takatori, and J.M. Lyons, "Weed Control in Asparagus," Calif Agric. 25(1):4-5 (1971).

<4454>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Postemergence (early and late) spray; 188 l./ha (early) and 235 l./ha (late, directed spray); X-77 surfactant (0.5%)
EXPERIMENTAL CONDITIONS: Field study; soil-Cecil sandy clay loam; time period--1969 to 1971
EFFECTS: Moderate weed control with no adverse effect on sunflower
COMMENTS: Excellent grass control and poor broadleaf weed control obtained from early postemergence treatments of RP 17623 when applied as over-the-top spray at either cotyledon or first-leaf stage of sunflower growth; weed control results similar to RP 17623 from several herbicides applied as late-directed postemergence sprays; early postmergence treatments with RP 17623 caused some early injury to sunflower plants and reduction in achene oil percent when compared with achenes from untreated plants, but achene yields not reduced
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Postemergence on Weeds and Sunflowers," Crop Sci. 12(1):695-697 (1972).

<4455>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Cocklebur, common (XANTHIUM PENSYLVANICUM); Jimsomweed (DATURA STRAMONIUM); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Postemergence spray; 10 or 25 gal/A at 60 or 30 psi; used in combination with alachlor at 2.0 qt/A for grass control
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of weeds with no adverse effect on soybean yield
COMMENTS: Any of four herbicides tested provided excellent control and result in favorable net return if used early in cropping season; later applications, although better than no treatments, resulted in considerably lower net return
REFERENCE: Coble, H. D., "Optimizing Broadleaf Weed Control in Soybeans With Postemergence Herbicide," Down Earth 32(4):12-15 (1977).

<4456>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Poor control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4457>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Soybean (GLYCINE MAX); Sesbania, hemp (SESBANIA EXALTATA); Mexicanweed (CAPERONIA CASTANAEFOLIA); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Dayflower, common (COMMELINA COMMUNIS)
EXPERIMENTAL DOSE: 1.68 kg/ha
APPLICATION METHODS: Postemergence spray; 2.0 m swath; 0.5% X-77 surfactant
EXPERIMENTAL CONDITIONS: Field study; soil--heavy clay; evaluation time--2 or 6 wk
EFFECTS: Moderate injury to soybean with only slight to moderate control of weeds
COMMENTS: As postemergence treatments, bentazon plus surfactant applied topically and linuron plus surfactant or metribuzin plus surfactant directed gave good to excellent control of dayflower, hemp sesbania was controlled by treatments containing linuron, metribuzin or prometryne, all plus surfactant and directed; mexicanweed was controlled by directed applications of treatments containing linuron, metribuzin, prometryne or 2,4-DB, all plus surfactant; good control of morningglory was obtained with directed applications of treatments containing 2,4-DB, dinoseb + naptalam plus surfactant, or prometryne plus surfactant
REFERENCE: Eastin, E.F., "Control of Problem Weeds in Texas Soybeans," Proc. South. Weed Sci. Soc. 26:67-73 (1973).

<4458>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Grasses; Broadleaf weeds; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.56, 1.12, and 1.68 kg/ha
APPLICATION METHODS: Postemergence spray, semi-directed; 188--235 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy loam; time period--1968 and 1969
EFFECTS: Moderate control of all weeds at highest rate with moderate injury to soybean and yield reduction
COMMENTS: Nitralin controlled grasses and chloroxuron controlled broadleaf weeds in soybeans as well singly as when combined; in 1 year out of 2, nitralin and chloroxuron in combination caused more plant injury than either herbicide alone
REFERENCE: Johnson, B.J., Effects on Nitralin and Chloroxuron Combination on Weeds and Soybeans," Weed Sci. 18(5):616-618 (1970).

<4459>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Carrot (DAUCUS CAROTA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Postemergence 40 days after planting
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; seedbeed prepared April 25; 4 replications; weed control evaluated on August 2
EFFECTS: Poor pigweed and foxtail control; pigweed control somewhat better than foxtail
COMMENTS: Herbicide combinations also tested; no injury rating for carrots; heavy rains delayed planting until May 2
REFERENCE: Noll, C.J., "Evaluation of Eight Herbicides Alone and in Combination for Weed Control in Carrots," Proc. Northeast. Weed Sci. Soc. 28:167-171 (1974).

<4460>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Onion (ALLIUM CEPA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Postemergence 30 days after planting
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared April 16 of the following year; seeding 1 day after seedbed preparation; single row plots 3 by 28 ft; herbicides applied in 2 ft band over row; irrigation as needed; weed ratings, 123 days after seeding; onion harvest, more than 5 months after seeding--34 bulbs from untreated control
EFFECTS: Poor pigweed control, good lambsquarter control, complete foxtail control; 41 bulbs at 2 lb/A and 44 bulbs at 4 lb/A harvested
COMMENTS: Chloroxuron in combination with other herbicides also tested
REFERENCE: Noll, C.J., "Evaluation of Herbicides for Weed Control in Seeded Onions Grown in Mineral Soils," Proc. Northeast. Weed Sci. Soc. 28:221-223 (1974).

<4461>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Soybean (GLYCINE MAX); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: Early postemergence
EXPERIMENTAL CONDITIONS: Cecil sandy loam or Cecil sandy clay loam; 13 experiments; soybean injury and grass and broadleaf weed control assessed 5 to 7 and 10 to 15 days after treatment
EFFECTS: Grass control--avg. of 81% at 5 to 7 days (53-99% range) and 73% at 10 to 15 days (38-98% range) at 1.0 lb/A, avg. of 78% at 5 to 7 days (45-98%) and 85% at 10 to 15 days (75-98%) at 1.5 lb/A; broadleaf weed control--73% avg. at 5 to 7 days (55-91%) and 76% at 10 to 15 days (51-93%) at 1.0 lb/A, 79% avg. at 5 to 7 days (66-91%) and 85% at 10 to 15 days (73-93%) at 1.5 lb/A; soybean injury--8% avg. at 5 to 7 days (0-19%) and 7% at 10 to 15 days (0-14%) at 1.0 lb/A, 8% at 5 to 7 days (0-17%) and 11% at 10-15 days (0-25%) at 1.5 lb/A
COMMENTS: Soybean injury--stunting and growth retardation several days following treatment, temporary; seed yield 12% higher at 1.5 lb/A than 1.0 lb/A; maximum weed control at 1.5 lb/A
REFERENCE: Johnson, B.J., "Performance of Chloroxuron on Weeds and Soybeans," Ga. Agric. Res. 13(4):7-9 (1972).

<4462>
<4462>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: Preemergence in 1967, postemergence in 1968
EXPERIMENTAL CONDITIONS: 4 soybean varieties; 2-year experiment (1967-1968); randomized split-plot design with 4 replications; varieties were main plots with herbicide treatments as subplots; cultivation as needed
EFFECTS: Seedling vigor--good both years but 1968 vigor significantly decreased from cultivated check; seed yield--significantly decreased from check in 1968 but not in 1967; plant lodging not significantly different from check either year
COMMENTS: Difference in 1967 and 1968 action explained by application time
REFERENCE: Johnson, B.J., "Soybean Varieties React Similarly to Herbicides," Ga. Agric. Res. 13(1):7-8 (1971).

<4463>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Postemergence treatment in water at 30 gpa; 0.5% by volume of tank mix of surfactant Adjuvan T added
EXPERIMENTAL CONDITIONS: 3 year experiment (1968-1970); 4 applications at 2-to 3-day intervals to each plot, initial application made in June; randomized split-plot design, 16 ft rows 3 ft apart; directed postmemergence spray to plant base; plant injury, stem damage, and yield among primary observations
EFFECTS: Early season injury--no injury in 1968, significant injury at application 2, 3, and 4 in 1969 and 1970; no late season injury; stem damage--significant injury at all applications; no significant decrease in yield
COMMENTS: Early season injury--lower leaves killed from spray application; late season injury--chlorotic venation and leaf deterioration
REFERENCE: Johnson, B.J., "Multiple Applications of Herbicides on Soybeans," Ga. Agric. Res. 14(1):5-8 (1972).

<4464>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Soybean (GLYCINE MAX); Cocklebur, common (XANTHIUM PENSYLVANICUM); Morningglory, tall (IPOMOEA PURPUREA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Sida, spiny (SIDA SPINOSA)
EXPERIMENTAL DOSE: 0.84, 1.68, and 3.36 kg/ha
APPLICATION METHODS: Postemergence spray; 0.5% Adjuvan-T surfactant; directed and semi-directed application; topical application to weeds at different growth stages
EXPERIMENTAL CONDITIONS: Field study; soil--Crowley silt loam and Taloka silt loam; combined treatments; time period-- 1968 to 1970
EFFECTS: Slight to moderate damage at all rates initially to soybean but no adverse effect on yield; effective control of all weeds at 3.36 kg/ha and of morningglory, sida, and pigweed at 1.68 kg/ha
COMMENTS: Chloroxuron damaging when applied twice to soybean and reduced yields in one of two year's studies; direct comparisons of topical applications of dinoseb and chloroxuron showed that soybean injury increased with increased rate of material at each soybean growth stage with the most severe initial damage in the two-trifoliate stage
REFERENCE: Baldwin, F.L. and R.E. Frans, "Soybean and Weed Response to Dinoseb and Chloroxuron Applied Topically," Weed Sci. 20(5):511-514 (1972).

<4465>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Soybean (GLYCINE MAX); Cocklebur, common (XANTHIUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 0.28 - 8.96 kg/ha
APPLICATION METHODS: Postemergence spray; 262 l./ha
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Cocklebur effectively controlled in soybeans although slight to moderate damage to soybeans was observed; increased soybean yield usually resulted, but not in one case
COMMENTS: Surfactant addition to chlorxuron enhanced cocklebur control but also resulted in increased injury to soybeans
REFERENCE: Gossett, B.J., L.R. (Reinhardt, and W.P. Byrd, "Cocklebur Control in Soybeans with 2,4-DB and Chloroxuron," Weed Sci. 20(5):489-491 (1972).

<4466>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Soybean (GLYCINE MAX); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Preplant spray; soil incorporation by rototilling (5 cm); postemergence spray; 188-282 l/ha; 0.5% surfactant; lay by and directed sprays; varied combinations of herbicides and methods of application
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy loam and Cecil sandy clay loam; evaluation time--3, 5, 7 or 8, and 11 wks; time period--1968 to 1970
EFFECTS: Slight control of all grasses with slight damage to soybeans in postemergence application
COMMENTS: When chloroxuron applied in sequence with split application of either linuron or prometryne, control of broadleaf weeds comparable to that obtained when preplant treatments applied in sequence with these postemergence treatments in 1969 and 1970; control of grasses by these postemergence treatments less effective than single preplant treatments
REFERENCE: Johnson, B.J., "Effects of Sequential Herbicide Treatments on Weeds and Soybeans," Weed Sci. 19(6):695-700 (1971).

<4467>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Soybean (GLYCINE MAX); Morningglory, tall (IPOMOEA PURPUREA); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: Greenhouse--0.07, 0.28, 1.12, and 4.48 kg/ha; field--0.56, 1.12, and 2.24 kg/ha
APPLICATION METHODS: Greenhouse--root treatments in nutrient solution, foliar treatments in spray at 935 l./ha; field--postemergence at various plant growth stages, preemergence also
EXPERIMENTAL CONDITIONS: Greenhouse--0, 7, 14, 21, and 28-day old soybean and morningglory plants, grown in quartz sand, root and foliage application at various growth stages; 4 replications in randomized block design; field--Monmouth fine sandy loam, treatments with and without surfactant, randomized block design with 4 replications
EFFECTS: Greenhouse--root applications more toxic than foliar applications; field--soybeans tolerant to all rates applied preemergence and postemergence at 19 days of age, severe soybean injury at 2.24 kg/ha and at all rates plus surfactant on 12-day old seedlings, 26 and 33-day old soybeans also exhibited injury, morningglory very susceptible until 19 days of age
REFERENCE: Parochetti, J.V., R.W. Feeny, and S.R. Colby, "Preemergence Herbicides plus Postemergence Chloroxuron on Soybeans," Weed Sci. 20(6):548-553 (1972).

<4468>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Poor sesame tolerance and poor barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<4469>
CHEMICAL NAME: Urea, N'-[4-(4-chlorophenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Chloroxuron
PLANT: Broadleaf weeds; Grasses; Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Preplant incorporated (7 cm depth); preemergence and postemergence sprays; 308 l./ha; combined treatments
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: In combined pre-and postemergence applications of chloroxuron, moderate control of weeds with no adverse effect on carrot yield although early slight phytotoxicity was observed
COMMENTS: Combination treatment consisting of trifluralin preplant incorporated followed by a postemergence application of linuron provided season long weed control; carrots tolerated postemergence applications of Hoe 23408 which selectively controlled annual grass weeds; combination of Hoe 23408 plus linuron resulted in more rapid weed kill than with either material alone
REFERENCE: Henne, R.C., "Chemical Weed Control in Carrots," Proc. Northeast Weed Sci. Soc. 31:238-243 (1977).

<4470>
CHEMICAL NAME: Urea, N'-[4-(4-methoxyphenoxy)phenyl]-N,N-dimethyl-
CHEMICAL COMMON NAME: Difenoxuron
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 3.63 to 5.13 kg/ha
APPLICATION METHODS: Addition to soil; laboratory sprayer; 413 l./ha at 2.11 kg/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soils-- Bledington and Boddington Barn; pot culture; temperature--13 to 23 C; pH--6.3 or 6.9 or 7.3
EFFECTS: Growth reduction of ryegrass; reduction greater in limed soil
COMMENTS: Metoxuron, fenuron, metribuzin, and fluometuron more active in Boddington Barn soil than in Bledington soil; prometryne similar in effect in both soils
REFERENCE: Richardson, W.G. and J.D. Banting, "The Phytotoxicity of Various Herbicides in Two Sandy Loam Soils and the Effect of Liming," Weed Res. 17(3):203-207 (1977).

<4471>
CHEMICAL NAME: Urea, 1-methyl-3-(alpha, alpha, alpha, trifluoro-m-tolyl)-
CHEMICAL COMMON NAME: DMFM
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Foxtail (SETARIA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 2 to 25 ppmw (soil); 10 to 150 micro M (nutrient solution)
APPLICATION METHODS: Addition to soil or nutrient solution
EXPERIMENTAL CONDITIONS: Greenhouse study; clay soil pH--7.4; environmental chamber-- 14 hr photoperiod, 30 C (day) and 20 C (night), and 16,100 lumens/sq m; laboratory study--manometric
EFFECTS: Nearly as active as fluometuron in soil study; growth reduction
COMMENTS: Fluometuron most active compound, and demethylated derivative and aniline analog least phytotoxic; activity of monomethyl analog of fluometuron applied via nutrient solution and to clay soil about 50% and 70% of parent compound, respectively; photosynthesis in cotton and redroot pigweed inhibited by fluometuron, to lesser degree by monomethyl analog, and not all by demethyl and aniline analogs
REFERENCE: Rubin, B. and Y. Eshel, "Phytotoxicity of Fluometuron and Its Derivatives to Cotton and Weeds," Weed Sci. 19(5):592-594 (1971).

<4472>
<4472>
CHEMICAL NAME: Urea, 1-n-butyl-3-(3,4-dichlorophenyl)-1-methyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4473>
CHEMICAL NAME: Urea, 1,1-dimethyl-3-(5-tert-butyl-1,3,4-thiadiazol-2-yl)-
PLANT: Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 20 to 3000 ppm
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Environmental chamber; pot culture
EFFECTS: Reduced growth of wheat and slightly reduced growth of barley
COMMENTS: Found to have strongest herbicidal activities among thiadiazolylurea derivatives; selectivity found between barley (tolerant) and wheat (susceptible) plants; neither absorption by roots nor translocation from roots to shoots in barley and wheat correlated with selectivity between these species of plants.
REFERENCE: Lee, I.N. and K. Ishizuka, "A Mode of Selective Action of Thiadiazolyl Urea Herbicides," Arch. Env. Contam. Toxicol. 4:155-165 (1976).

<4474>
CHEMICAL NAME: Urea, 3-(alpha, alpha, alpha-trifluoro-m-tolyl)-
CHEMICAL COMMON NAME: TFMPU
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Foxtail (SETARIA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 2 to 25 ppmw (soil); 10 to 150 micro M (nutrient solution)
APPLICATION METHODS: Addition to soil or nutrient solution
EXPERIMENTAL CONDITIONS: Greenhouse study; clay soil pH--7.4; environmental chamber-- 14 hr photoperiod, 30 C (day) and 20 C (night), and 16,100 lumens/sq m; laboratory study--manometric
EFFECTS: Less active in soil study than fluometuron and DMFM; minor growth reduction
COMMENTS: Fluometuron most active compound, and demethylated derivative and aniline analog least phytotoxic; activity of monomethyl analog of fluometuron applied via nutrient solution and to clay soil about 50% and 70% of parent compound, respectively; photosynthesis in cotton and redroot pigweed inhibited by fluometuron, to lesser degree by monomethyl analog, and not all by demethyl and aniline analogs
REFERENCE: Rubin, B. and Y. Eshel, "Phytotoxicity of Fluometuron and Its Derivatives to Cotton and Weeds," Weed Sci. 19(5):592-594 (1971).

<4475>
CHEMICAL NAME: Urea, 3-(3,4-dichlorophenyl)-1-(isopropyl-2-propynyl)-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4476>
CHEMICAL NAME: Urea, 3-[4-(2-tert-butyl-5-oxo-delta(2)-1,3,4-oxadiazolin-4-yl)-3-chlorophenyl]-1,1-di methyl-
CHEMICAL COMMON NAME: RP-23465
PLANT: Ash, green (FRAXINUS PENNSYLVANICA); Poplar, yellow (LIRIODENDRON TULIPIFERA); Walnut, black (JUGLANS NIGRA); Pine, white (PINUS STROBUS); Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 4.0 and 7.0 kg/ha; 80% WP
APPLICATION METHODS: Posttransplant spray; 29 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Ross-Geneco complex
EFFECTS: Low survival at both rates
COMMENTS: Oxadiazon, napropamide and simazine produced very favorable results at low rates; simazine only injurious to green ash; diphenamid and DCPA effective without incorporation only at extremely high rates; tolerance range for Velpar and RP-23465 for use on newly planted seedlings appear very small; bifenox as used did not appear to be detrimental to seedlings
REFERENCE: Wiltrout, T.R. and H.A. Holt, "Prospects of Controlling Vegetation in New Forest Plantations," Proc. N. Cent. Weed Control Conf. 30:31-36 (1975).

<4477>
CHEMICAL NAME: Urea, 3-phenyl-1,1-dimethyl-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: At 20.0 lb rate, moderate initial control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4478>
CHEMICAL NAME: Uridine, 2'-deoxy-5-fluoro-
CHEMICAL COMMON NAME: 5-FDU
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.0x10(-3) to 5.0x10(-3)M
APPLICATION METHODS: Immersion in assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated bean seedling leaves; evaluation time--12 to 14 hr
EFFECTS: Inhibited protein synthesis and chloroplast formation
COMMENTS: Inhibitors affected RNA synthesis blocked 2nd stage and arrested proplastid conversion to chloroplasts; plastid division also seemed to stop; inhibition of DNA synthesis blocked 1st stage; proplastids, escaping the stage of division, directly converted to chloroplasts which are, similarly to those formed in the first case, incapable of division
REFERENCE: Beridze, T.G., M.S. Odintsova, N.A. Cherkashina, and M.M. Sissakian, "The Effect of Nucleic Acid Synthesis Inhibitors on the Chlorophyll Formation by Etiolated Bean Leaves," Biochem. Biophys. Res. Comm. 23(5):683-690 (1966).

<4479>
CHEMICAL NAME: Uridine, 5-bromo-2'-deoxy-
PLANT: (AGERATUM CORYMBOSUM)
EXPERIMENTAL DOSE: 0.01M
APPLICATION METHODS: First generation seeds incubated in test solution for 18 hr
EXPERIMENTAL CONDITIONS: Surviving seeds germinated; effects on 5 generations studied
EFFECTS: 4 out of 25 seeds survived 18 hr exposure; fifth generation plants showed chloroplast mutations, dwarfism, and alterations in leaf size and morphology
REFERENCE: Zamecnik, M.V. and P.C. Zamecnik, "Mutation of Chloroplasts in AGERATUM, Following Treatment with 5-Bromodeoxyuridine," Exp. Cell Res. 45:218-229 (1966)

<4480>
CHEMICAL NAME: Uridine, 5-fluorodcoxy-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 10(-5) and 10(-7)M
APPLICATION METHODS: 3-hr treatments to roots
EXPERIMENTAL CONDITIONS: Beans germinated and grown in water culture; lateral roots fixed 2,3,4, and 6 hr after beginning of treatment in chilled acetic acid; squash preparations of 5 lateral root apices for each treatment and at each fixation time
EFFECTS: Cells in G(2) phase of mitotic cycle arrested--progress to mitosis prevented
COMMENTS: Also used as selective inhibitor of DNA synthesis
REFERENCE: Socher, S.H. and D. Davidson, "Evidence for an Effect of 5-Fluorodeoxyuridine on Cells in the G(2) Phase of the Mitotic Cycle," Can. J. Genet. Cytol. 13:70-74 (1971).

<4481>
CHEMICAL NAME: USB 3153
CHEMICAL COMMON NAME: USB 3153
PLANT: Junglerice (ECHINOCHLOA COLONUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rice (ORYZA SATIVA); Bermudagrass, common (CYNODON DACTYLON); Wiregrass (ELEUSINE INDICA); Celosia (CELOSIA ARGENTEA); Purslane, sea- (TRIANTHEMA PORTULACASTRUM); Sensitive-plant (MIMOSA PUDICA); (ACANTHESPERMA HISPIDIA)
EXPERIMENTAL DOSE: 2 kg/ha
APPLICATION METHODS: Treatment 15 days after sowing; liquid formulations
EXPERIMENTAL CONDITIONS: Sandy loam soil; randomized block design with 3 replications; plots, 15 sq m; one-half of each plot treated, other half not treated; ground fertilized; weeds from sampling area within each plot of 7,500 sq cm counted at 14, 25, 42, and 82 days after rice emergence(DARE)
EFFECTS: 93% or better weed control at 25 DARE; 65% weed control at 42 DARE; less than 30% weed control at 82 DARE; no rice plant injury
COMMENTS: For tabulations, weeds not listed by species
REFERENCE: Gunasena, H.P.M. and H.W. Kannangara, "Evaluation of Herbicides for Rain-Fed Upland Rice," J. Nat. Sci: Counc. Sri Lanka 24(2):161-164 (1974).

<4482>
<4482>
CHEMICAL NAME: USB 3153
CHEMICAL COMMON NAME: USB 3153
PLANT: Broadleaf weeds; Grasses; Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Preemergence sprays in 20 gpa water
EXPERIMENTAL CONDITIONS: Eight sugarcane varieties; weed control and crop injury assessments 8 weeks after treatment
EFFECTS: 95% grass and 80% broadleaf weed control increase over check; 5-10% sugarcane yield decrease
REFERENCE: Reeves, S.A., Jr., "Evaluations of selected Pre and Postemergence Chemicals on Weed Control and Phytotoxicity to Eight Sugarcane Varieties," Proc. South. Weed Sci. Soc. 30:130-132 (1977).

<4483>
CHEMICAL NAME: USB 3153
CHEMICAL COMMON NAME: USB 3153
PLANT: Sugarcane (SACCHARUM sp.); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Preemergence incorporated treatments in 20 gpa water
EXPERIMENTAL CONDITIONS: Mid-May applications, ratings 8 weeks later
EFFECTS: No sugarcane injury; 78% weed control
COMMENTS: Emergence refers to weeds
REFERENCE: Scott, A.W., Jr. and S.A. Reeves, Jr., "Evaluation of Selected Pre and Postemergence Weed Control Treatments in Sugarcane," Proc. South. Weed Sci. Soc. 30:125-129 (1977).

<4484>
CHEMICAL NAME: Vel 4207
CHEMICAL COMMON NAME: Vel-4207
PLANT: Spurge, spotted (EUPHORBIA MACULATA); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Postemergence spray; June application
EXPERIMENTAL CONDITIONS: Golf course green; randomized complete block designs with 4 replications; turf appearance, turf density, and weed control assessed; untreated check as control
EFFECTS: Turf appearance--77, 98, and 100% of check at 7, 18, and 27 days after treatment; no influence on turf density; 71% weed control 27 days after treatment
COMMENTS: Temporary bermudagrass injury; herbicide combinations also tested
REFERENCE: Johnson, B.J., "Spotted-Spurge Control in Bermudagrass Golf Greens with Herbicides: A Preliminary Report," Ga. Agric. Res. 18(2):24-25 (1976).

<4485>
CHEMICAL NAME: Vel 4207
CHEMICAL COMMON NAME: Vel-4207
PLANT: Goosegrass (ELEUSINE INDICA); Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Broadcast (G) with spreader; preemergence spray, 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; mature Kentucky bluegrass lawn; soils-sandy and loam; crabgrass seed sown on lawn just prior to applications
EFFECTS: Very slight control of goosegrass with no injury to turf grass
COMMENTS: A-820, CG-10832, PPG-139 and RP-17623 gave good crabgrass control; April versus May application of several of preemergence types show that specific guidelines are needed to obtain efficient crabgrass control; goosegrass control fair to good for several chemicals, but all materials considered poor to unsatisfactory
REFERENCE: Engel, R.E., C.W. Bussey, and P. Catron, "Crabgrass and Goosegrass Control in Turfgrass with Several Preemerge Herbicides," Proc. Northeast. Weed Sci. Soc. 29:369-371 (1975).

<4486>
CHEMICAL NAME: Vel 4207
CHEMICAL COMMON NAME: Vel-4207
PLANT: Plaintain, black-seeded (PLANTAGO RUGELII); Clover, white (TRIFOLIUM REPENS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 0.25 to 4.0 lb/A; 2% EC
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; time period--1974 and 1975
EFFECTS: Slight to moderate control of plantain and effective control of clover at 1.0 lb/A or less with slight adverse effect on bluegrass
COMMENTS: Combination treatments were more effective than single herbicides alone; Vel 4207 showed considerable activity at low rates on white clover with limited effectiveness on plantain; methazole injurious to turf
REFERENCE: Hall, J.R., "Control of Broadleaf Weeds in Cool-Season Turf," Proc. N.E. Weed Sci. Soc. 30:377-384 (1976).

<4487>
CHEMICAL NAME: Vel 4207
CHEMICAL COMMON NAME: Vel-4207
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, large (DIGITARIA SANGUINALIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.25 and 0.5 lb/A
APPLICATION METHODS: Preemergence spray in 40 gpa water
EXPERIMENTAL CONDITIONS: Randomized complete block design with 3 replications; 9 x 22 ft plot size; Paxton fine sandy loam; preemergence treatments made May 23, postemergence treatments on June 9; visual rating
EFFECTS: Moderate crabgrass control at both rates; moderate pigweed control at 0.5 lb/A but minor control at 0.25 lb/A with no control by October; corn yield at 0.5 lb/A significantly greater than check
REFERENCE: Dest, W.M., R.A. Peters, and M. Barrett, "The Control of Crabgrass and Redroot Pigweed in Silage Corn," Proc. Northeast. Weed Sci. Soc. 30:55-58 (1976).

<4488>
CHEMICAL NAME: Vel 4207
CHEMICAL COMMON NAME: Vel-4207
PLANT: Clover, white (TRIFOLIUM REPENS); Chickweed, mouse-ear (CERASTIUM VISCOSUM); Dandelion, common (TARAXACUM OFFICINALE)
EXPERIMENTAL DOSE: 0.25 to 1.00 lb/A
APPLICATION METHODS: Foliar spray; 50 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1974 and 1975; soil--Bridgehampton silt loam
EFFECTS: At 0.5 lb/A, effective weed control except for dandelion (moderate control)
COMMENTS: Variable control of dandelion observed with all applications of 2,4-D; combinations of 2,4-D with one or more herbicides -- dicamba, mecoprop or silvex -- provided good broad spectrum control and in certain cases greater than 90 percent control; a newer material RO-7-6145 gave good control of chickweed and dandelion; PP-831 provided better than 90 percent control of clover and chickweed
REFERENCE: Jagschitz, J.A. and L.H. Barrett, "Chemical Control of Broadleaved Weeds in Cool Season Turfgrasses," Proc. N.E. Weed Sci. Soc. 30:385-388 (1976).

<4489>
CHEMICAL NAME: Vel 5026
CHEMICAL COMMON NAME: Vel-5026
PLANT: Broadleaf weeds; Grasses; Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: Preemergence sprays in 20 gpa water
EXPERIMENTAL CONDITIONS: Eight sugarcane varieties; weed control and crop injury assessments 8 weeks after treatment
EFFECTS: 30-60% decrease in sugarcane yield; good weed control
REFERENCE: Reeves, S.A., Jr., "Evaluations of selected Pre and Postemergence Chemicals on Weed Control and Phytotoxicity to Eight Sugarcane Varieties," Proc. South. Weed Sci. Soc. 30:130-132 (1977).

<4490>
CHEMICAL NAME: Vel 5052
CHEMICAL COMMON NAME: Vel-5052
PLANT: Grasses; Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 2 and 3 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared the following April; single row plots, 3 by 26 ft; treatments randomized in each of 8 blocks; 15 ft of row from each plot harvested July 16; non-treated plot--43 plants harvested
EFFECTS: Grass control--excellent at both rates on July 14; lambsquarter--poor control at both rates on June 7 and July 14; ragweed--good control at both rates on July 14; beet harvest--37 plants at 2 lb/A and 52 plants at 3 lb/A
COMMENTS: VEL 5052 in combinations with other herbicides also reported
REFERENCE: Noll, C.J., "Weed Control in Beets with Herbicides," Proc. Northeast. Weed Sci. Soc. 31:244-246 (1977).

<4491>
CHEMICAL NAME: Vel 5052
CHEMICAL COMMON NAME: Vel-5052
PLANT: Grasses; Broadleaf weeds; Purslane, common (PORTULACA OLERACEA); Crabgrass (DIGITARIA sp.); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Groundsel, common (SENECIO VULGARIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM); Azalea (RHODENDRON OBTUSUM); Andromeda (PIERIS JAPONICA); Maple, amur (ACER GINNALA); Maple, Japanese (ACER PALMATUM); Juniper (JUNIPERUS CHINENSIS); Holly (ILEX CRENATA); Privet, California (LIGUSTRUM OVALIFOLIUM); Firethorn (PYRACANTHA COCCINEA); Yew (TAXUS INTERMEDIA); Hemlock, Canadian (TSUGA CANADENSIS); Pine, Japanese black (PINUS THUNBERGII); Honeysuckle, gold flame (LONICERA HECKROTTI); Dogwood, flowering (CORNUS FLORIDA); Goldenbells (FORSYTHIA INTERMEDIA); Hydrangea (HYDRANGEA PANICULATA)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A; 5% G
APPLICATION METHODS: Postemergence spray, TeeJet nozzle; shaker broadcast for granular
EXPERIMENTAL CONDITIONS: Field study; nursery liners
EFFECTS: Effective control of all weeds and severe to moderate damage to ornamentals especially at 4.0 lb/A rate
COMMENTS: Alachlor and alachlor plus simazine combinations gave nearly complete weed control without injury to test plants; combinations of other herbicides with simazine also effective; Velsicol 5052 very effective against all plants, including nursery plants
REFERENCE: Bing, A., "1976 Preemergence Weed Control in Nursery Liners," Proc. Northeast Weed Sci. Soc. 31:320-325 (1977).

<4492>
<4492>
CHEMICAL NAME: Vel 5052
CHEMICAL COMMON NAME: Vel-5052
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 0.56 and 2.24 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: In postemergence application, poor control of broadleaf weeds and moderate control of grass with moderate tomato phytotoxicity at high rate
COMMENTS: Metribuzin, napropamide, and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<4493>
CHEMICAL NAME: Vel 5052
CHEMICAL COMMON NAME: Vel-5052
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, large (DIGITARIA SANGUINALIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1, 2, and 4 lb/A
APPLICATION METHODS: Preemergence spray in 40 gpa water
EXPERIMENTAL CONDITIONS: Randomized complete block design with 3 replications; 9 x 22 ft plot size; Paxton fine sandy loam; preemergence treatments made May 23, postemergence treatments on June 9; visual rating
EFFECTS: Crabgrass--good control all season at 4 lb/A, good half-season control and moderate last of season control at 2 lb/A, moderate June, good July and moderate October control at 1 lb/A; pigweed--good control at 2 and 4 lb/A but control not as good as crabgrass; corn yield at 2 and 4 lb/A significantly greater than check
REFERENCE: Dest, W.M., R.A. Peters, and M. Barrett, "The Control of Crabgrass and Redroot Pigweed in Silage Corn," Proc. Northeast. Weed Sci. Soc. 30:55-58 (1976).

<4494>
CHEMICAL NAME: Vel 5052
CHEMICAL COMMON NAME: Vel-5052
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, creeping red (FESTUCA RUBRA); Crabgrass (DIGITARIA ISCHAEMUM)
EXPERIMENTAL DOSE: 4 and 8 lb/A
APPLICATION METHODS: Preemergence treatments with CO(2) sprayer at 86 gpa
EXPERIMENTAL CONDITIONS: Crabgrass control studies in turfgrass; 4 x 5 ft plot with 3 replications; herbicides applied May 1, injury ratings on August 22
EFFECTS: 15 and 27% crabgrass control at 4 and 8 lb/A, respectively; minor turfgrass injury
COMMENTS: Fescue, bentgrass, and bluegrass tabulated as turfgrass
REFERENCE: Coville, C.M. and J.A. Jagschitz, "Herbicides for Preemergence Crabgrass and Goosegrass Control in Turfgrass--1975," Proc. Northeast. Weed Sci. Soc. 30:367-371 (1976).

<4495>
CHEMICAL NAME: Vel 5052
CHEMICAL COMMON NAME: Buthidazole
PLANT: Weeds
EXPERIMENTAL DOSE: 12 and 16 lb/A
APPLICATION METHODS: Postemergence in 50 gpa water
EXPERIMENTAL CONDITIONS: Treatments applied May 4, control ratings in August
EFFECTS: Good weed control
REFERENCE: Chappell, W.E. and M.L. Link, "Soil Sterilants for Maintaining Electric Sub-stations," Proc. South Weed Sci. Soc. 30:330-331 (1977).

<4496>
CHEMICAL NAME: Vel 5052
CHEMICAL COMMON NAME: Vel-5052
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 1.5, 2.0, and 2.5 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Effective control of pigweed, crabgrass, and panicum with moderate control of ragweed (5.0 lb/A only) and no effect on lambsquarters or corn
COMMENTS: VEL 5052 not effective on lambsquarters or common ragweed; buthiazole (VEL 5026) very effective on fall panicum; combinations of VEL 5052 with buthiazole or atrazine gave excellent control of many annual weeds; combinations of buthiazole with alachlor produced excellent control of many weeds
REFERENCE: Ilnicki, R.D. and R.W. Michieka, "Weed Control in Corn with VEL 5052 and Buthiazole (VEL 5026) Applied Alone, and in Combination with Atrazine and Alachlor," Proc. Northeast. Weed Sci. Soc. 31:15-19 (1977).

<4497>
CHEMICAL NAME: VEL-5026
CHEMICAL COMMON NAME: Vel-5026
PLANT: Grasses; Broadleaf weeds; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.25 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam
EFFECTS: Effective control of broadleaf weeds and moderate control of grasses with no adverse effect on corn yield
COMMENTS: Butylate and EPTC+R-25788 preplant incorporated applications provided excellent grassy weed control; fall panicum and crabgrass control obtained by various combination treatments which included alachlor, procyazine, atrazine, penoxalin, bifenox, metolachlor, or Vel 5026
REFERENCE: Vengris, J., "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 31:1-5 (1977).

<4498>
CHEMICAL NAME: Velsicol AR-50G
CHEMICAL COMMON NAME: Velsicol AR-50G
PLANT: Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 100, 200, and 500 ppm
APPLICATION METHODS: Solution addition to filter paper in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--75 F; evaluation time--48 hr; germinated seed selected and exposed
EFFECTS: Reduced growth at all concentrations; field study essentially corroborated results
COMMENTS: Phytotoxic effect of insecticide fertilizer mixtures attributed to fertilizer which interferred with uptake of water required by seed for germination, or to insecticide or solvent which may cause seedling damage; phorate and diazinon were more phytotoxic than Trithion or heptachlor in field and laboratory tests; insecticide solvent Velsicol AR-60 was more phytotoxic than xylene--depressed seedling emergence significantly in the field
REFERENCE: Allen, W.R., W.L. Askew, and K. Schreiber, "Effect of Insecticide Fertilizer Mixtures and Seed Treatments on Emergence of Sugar Beet Seedlings," J. Econ. Ent. 54(1):181-187 (1961).

<4499>
CHEMICAL NAME: Velsicol AR-60
CHEMICAL COMMON NAME: Velsicol AR-60
PLANT: Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 100, 200, and 500 ppm
APPLICATION METHODS: Solution addition to filter paper in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--75 F; evaluation time--48 hr; germinated seed selected and exposed
EFFECTS: Reduced growth at all concentrations; field study essentially corroborated results
COMMENTS: Phytotoxic effect of insecticide fertilizer mixtures attributed to fertilizer which interferred with uptake of water required by seed for germination, or to insecticide or solvent which may cause seedling damage; phorate and diazinon were more phytotoxic than Trithion or heptachlor in field and laboratory tests; insecticide solvent Velsicol AR-60 was more phytotoxic than xylene--depressed seedling emergence significantly in the field
REFERENCE: Allen, W.R., W.L. Askew, and K. Schreiber, "Effect of Insecticide Fertilizer Mixtures and Seed Treatments on Emergence of Sugar Beet Seedlings," J. Econ. Ent. 54(1):181-187 (1961).

<4500>
CHEMICAL NAME: VERTICILLIUM ALBO-ATRUM toxin
CHEMICAL COMMON NAME: VERTICILLIUM ALBO-ATRUM toxin
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion of cuttings
EXPERIMENTAL CONDITIONS: Laboratory study; fractions of fungus culture evaluated
EFFECTS: Wilting and severe necrosis
COMMENTS: Fractions I, II, and III caused severe persistent wilt within 6 hr, and Fraction V induced severe necrosis and wilting of cuttings 24-48 hr after application
REFERENCE: Mussell, H.W., "Toxic Proteins Secreted by Cotton Isolates of VERTICILLIUM ALBO-ATRUM," In: Phytotoxins in Plant Diseases" (R.K.S. Wood, A. Ballio, and A. Graniti, Eds.) Academic Press, London, New York, pp. 443-445 (1972).

<4501>
CHEMICAL NAME: Victorin
CHEMICAL COMMON NAME: Victorin
PLANT: Tobacco (NICOTIANA TABACUM); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Chlorosis and cellular alterations
COMMENTS: Victorin acted rapidly upon both cell wall and plasma membrane structure and function; ammonia also acted quickly upon membranes in general; P. TABACI toxin exerted effects more slowly by gradually suppressing nucleic acid and protein synthesis
REFERENCE: Goodman, R.N., "Phytotoxin-Induced Ultrastructural Modifications of Plant Cells," In: Phytotoxins in Plant Diseases (R.K.S. Wood, A. Ballio, and A. Graniiti, Eds.) Academic Press, London, New York, pp. 311-329 (1972).

<4502>
<4502>
CHEMICAL NAME: Vincaleuboblastine
CHEMICAL COMMON NAME: Vinblastine
PLANT: Barley (HORDEUM VULGARE); Bean, broad (VICIA FABA); Goldthread (NIGELLA DAMASCENA)
EXPERIMENTAL DOSE: 1 X 10(-6) to 1 X 10(-4) M
APPLICATION METHODS: Soak of newly-germinated root tips up to 24 hr
EXPERIMENTAL CONDITIONS: Laboratory study; cytology of root tips by Fuelgen squashes
EFFECTS: Chromosome aberrations maximum after 4 hr treatment
COMMENTS: Radiomimetic effects consisted of chromosome bridges and fragments; amount of such aberrations low (less than 1%) in barley and higher in broad bean; NIGELLA DAMASCENA found to be the most sensitive species
REFERENCE: Degraeve, N. and J. Gilot-Delhalle, "Cytological Effects of Vinblastine in Plants," Experimentia 28:581-582 (1972).

<4503>
CHEMICAL NAME: Weed-o-kill
CHEMICAL COMMON NAME: Weed-O-Kill
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 8.0 gal/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight control with heavy regrowth (3 mo)
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<4504>
CHEMICAL NAME: X-77
CHEMICAL COMMON NAME: X-77
PLANT: Lychee (LITCHI CHINENSIS)
EXPERIMENTAL DOSE: 1:500, 1:1000, and 1:2000
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Local chlorosis at leaf tip
COMMENTS: Lychee leaves susceptible to ionic and nonionic surfactants; injury due to wetting agents ranged from complete necrosis of leaves to chlorosis and mottling and premature leaf fall
REFERENCE: Nakata, S. and Y. Tanada, "Phytotoxicity of Wetting Agents on Lychee," J. Econ. Ent. 54(6):1074-1076 (1961).

<4505>
CHEMICAL NAME: Zinc chloride
CHEMICAL COMMON NAME: Zinc chloride
PLANT: Corn (ZEA MAYS); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 410, 707, and 1302 ppm
APPLICATION METHODS: Addition to sludge which was then added to soil to obtain concentration levels reported
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Warsaw sandy loam; pH--6.4 to 6.6, photoperiod--12 hr; temperature--18 to 27 C; evaluation time--6 wk; corn and rye "crops" rotated (corn/rye/corn)
EFFECTS: Effect of Zn quite large in crop yield reduction (18 to 98%)
COMMENTS: Yields decreased as Cu and Zu concentration of sludge increased; Ni had no appreciable effect; yields were increased significantly as the sludge Cr concentration increased, indicating that Cr may be inhibiting the uptake or translocation of other metals
REFERENCE: Cunningham, J.P., J.A. Ryan, and D.R. Keeney, "Phytotoxicity in and Metal Uptake from Soil Treated with Metal-Amended Sewage Sludge," J. Envir. Qual. 4(4):455-460 (1975).

<4506>
CHEMICAL NAME: Zinc, [[(1-methyl-1,2-ethanediyl)bis[carbamodithioato]](2-)]-
CHEMICAL COMMON NAME: Antracol
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: No adverse effect
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<4507>
CHEMICAL NAME: Zinc, [[1,2-ethanediylbis[carbamodithioato]](2-)]-
CHEMICAL COMMON NAME: Zineb
PLANT: Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 1700 ppm
APPLICATION METHODS: Spray treatments with 15-18 ml of suspension; solutions prepared by suspending test compound in tap water containing 0.05% Linor as spreader
EXPERIMENTAL CONDITIONS: Field A (well-grown) and field B (poorly-grown); seedlings transplanted to field on October 12--5 plots and 12 plants per plot, fertilizer added in January, spraying on May 2; analysis of leaves on May 2 and 6; control--tap water and Linor
EFFECTS: No phytotoxicity to onion leaves; field A plants--9% less DNA and 14% less RNA than control leaves; field B plants--28% more DNA but 19% less RNA than control leaves; very little difference in chlorophyll leaf content of control and zineb sprayed leaves; water content, dry matter, and ash content similar to control
REFERENCE: Shishiyama, J., M. Fukutomi, and S. Akai, "Effect of Some Fungicides on the Synthesis of Chlorophylls, Deoxyribonucleic Acid, and Ribonucleic Acid in Onion Leaves," Phytopathology 55:844-847 (1965).

<4508>
CHEMICAL NAME: Zinc, [[1,2-ethanediylbis[carbamodithioato]](2-)]-
CHEMICAL COMMON NAME: Lonocol
PLANT: Barley (HORDEUM VULGARE); Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.025%
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Reduced seed germination and seedling injury of barley and chromosome aberrations of barley and broad bean
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<4509>
CHEMICAL NAME: Zinc, [[1,2-ethanediylbis[carbamodithioto]](2-)]-
CHEMICAL COMMON NAME: Dithane Z-78
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/100 gal
APPLICATION METHODS: Postemergence (postflowering) spray; 50-55 psi to run-off; sprayed 2X
EXPERIMENTAL CONDITIONS: Field (29.5 C) and laboratory (19 C); intact flowers in field and cut flowers in laboratory; spray applied directly to flowers
EFFECTS: No adverse effect on flowers
COMMENTS: Some compounds not phytotoxic after two applications under any conditions (daconil, dithane M-15, dithane Z-78, morsodren, orthocide, phosdrin and thuricide); among phytotoxic chemicals and combinations, there was a greater tendency for injury occurring at 1) high temperature than at the low, 2) fast drying rate than the slow, 3) high temperature at fast rather than slow drying rate, and 4) high temperature at fast drying rate than low temperature at the slow rate
REFERENCE: Engelhard, A.W., "Chemical Sprays: Concentration, Drying Rate and Temperature Effects on Chrysanthemum Flower Quality", Florida State Hort. Soc. 85:370-374 (1973).

<4510>
CHEMICAL NAME: Zinc, bis(dimethylcarbamodithioato-S,S')-,(T-4)-
CHEMICAL COMMON NAME: Cuman
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Reduced seed germination, seedling damage, and chromosome abberrations
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<4511>
<4511>
CHEMICAL NAME: 1-Acetic acid, 2-pentyl-3-oxocyclopentyl-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 63; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<4512>
CHEMICAL NAME: 1-Acetic acid, 3-pentyl-4-oxocyclopentyl, methyl ester
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germinated in test solution
EXPERIMENTAL CONDITIONS: 10 seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorded after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 16; percent germination, 100
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<4513>
CHEMICAL NAME: 1-Benzopyran-2-one, 2H-
CHEMICAL COMMON NAME: Coumarin
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 100 ppm
APPLICATION METHODS: Germination in Petri dish solutions (20 ml)
EXPERIMENTAL CONDITIONS: Primary root growth observed; 25 seeds for each of 3 Petri dishes, 4-day germination at 76 F; root growth tabulated as percent of control
EFFECTS: 58 and 15% primary root growth at 10 and 100 ppm, respectively
COMMENTS: Experimental preparation of some compounds described
REFERENCE: Schlesinger, A.H. and D.T. Mowry, "Benzothiophenes and Their 1-Dioxides," J. Am. Chem. Soc. 73:2614-2616 (1951).

<4514>
CHEMICAL NAME: 1-Benzopyran-2-one, 2H-
CHEMICAL COMMON NAME: Coumarin
PLANT: Cress (LEPIDIUM SATIVUM); Radish (RAPHANUS SATIVUS); Gram (CICER ARIETINUM); Carrot (DAUCUS CAROTA); Onion (ALLIUM CEPA); Beet, sugar (BETA VULGARIS); Dandelion (TARAXACUM OFFICINALE); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 0.1 to 100 ppm
APPLICATION METHODS: Addition to culture solution and to soil
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination and root growth studied
EFFECTS: Germination and growth inhibited; inhibition reversed by washing seed
COMMENTS: Dual nature of phytocidal activity of coumarin; namely, inhibition of both germination and subsequent root-growth; with respect to inhibition of root-growth, one feature of activity of coumarin is similarity to action of 2,4-D and other phytocidal agents of heteroauxin class
REFERENCE: Audus, L.J. and J.H. Quastel, "Coumarin as a Selective Phytocidal Agent," Nature 159(4036):320-324 (1947).

<4515>
CHEMICAL NAME: 1-Benzopyran-2-one, 2H-
CHEMICAL COMMON NAME: Coumarin
PLANT: Bladderwort (UTRICULARIA NIFLEXA)
EXPERIMENTAL DOSE: 58 mg/l.
APPLICATION METHODS: Addition to nutrient solution
EXPERIMENTAL CONDITIONS: Laboratory study; IN VITRO culture of shoot tips of U. INFLEXA in glass tubes or flasks containing White's nutrient medium; incubation temperature--28 C; photoperiod--18 hr; evaluation time--up to 10 wk
EFFECTS: Death of plants under short and long-day conditions
COMMENTS: MEPA showed strong herbicidal effect and killed plants; AMO-1618 and coumarin inhibited apical as well as lateral bud growth; These three compouds and ABA, kinetin, BA, and zeatin unable to promote flowering under non-inductive conditions; BA stimulated growth in both long and short days; even in the latter conditions AMO-1618 and coumarin totally inhibited flowering, whereas ABA, kinetin and BA permitted 80-100 per cent of the cultures to flower; zeatin lowered the percentage of flowering cultures
REFERENCE: Ram, H.Y.M., H. Harada, and J.P. Nitsch, "Studies on Growth and Flowering in Axenic Cultures of Insectivorous Plants. III. Effects of Photoperiod, Ethrel, Morphactin and a Few Other Growth Substances and Metabolic Inhibitors on UTRICULARIA INFLEXA," Z. Pflanzenphysiol. Bd. 68(5):235-253 (1972).

<4516>
CHEMICAL NAME: 1-Benzopyran-2-one, 2H-
CHEMICAL COMMON NAME: Coumarin
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 250 mg/ml
APPLICATION METHODS: Solution immersion
EXPERIMENTAL CONDITIONS: Laboratory study; sections of etiolated pea hypocotyls immersed in solutions; 250 mg/5 ml; evaluation time--24 hr; temperature--25C
EFFECTS: Reduced growth and respiration
COMMENTS: Activity of IAA in control series increased to same extent as fresh matter, i.e. by about 40%; Phosfon 1) and CCC decreased growth by about 50% and did not significantly increase activity of IAA; coumrin inhibited synthesis of enzyme; of growth stimulators tested, only gibberellic acid (GA-3) significantly decreased activity of IAA in CCC series
REFERENCE: Knypl, J.S. and A. Rennert, "Growth Inhibitors and the Indole-3-acetic Acid Oxidase Contents of Cucumber Hypocotyl Sections," Kurse 54:544 (1967).

<4517>
CHEMICAL NAME: 1-Benzopyran-2-one, 2H-
CHEMICAL COMMON NAME: Coumarin
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<4518>
CHEMICAL NAME: 1-Benzopyran-2-one, 3-chloro-2H-
CHEMICAL COMMON NAME: Monochlorcoumarin
PLANT: Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: 0.1 to 100 ppm
APPLICATION METHODS: Addition to culture solution and to soil
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination and root growth studied
EFFECTS: Germination and growth inhibition; less inhibitive than coumarin
COMMENTS: Dual nature of phytocidal activity of coumarin; namely, inhibition of both germination and subsequent root-growth; with respect to inhibition of root-growth, one feature of activity of coumarin is similarity to action of 2,4-D and other phytocidal agents of heteroauxin class
REFERENCE: Audus, L.J. and J.H. Quastel, "Coumarin as a Selective Phytocidal Agent," Nature 159(4036):320-324 (1947).

<4519>
CHEMICAL NAME: 1-Benzopyran-8-ol, 2,2-dimethyl-2H-methylcarbamate-
CHEMICAL COMMON NAME: NIA-11637
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Moderate to severe leaf damage with little or no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<4520>
CHEMICAL NAME: 1-Benzopyrancarboxylic acid, 2-oxo-2H-
CHEMICAL COMMON NAME: Coumarin-carboxylic acid
PLANT: Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: 0.1 to 100 ppm
APPLICATION METHODS: Addition to culture solution and to soil
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination and root growth studied
EFFECTS: Germination and growth inhibition; less inhibitive than coumarin and monochlor-coumarin
COMMENTS: Dual nature of phytocidal activity of coumarin; namely, inhibition of both germination and subsequent root-growth; with respect to inhibition of root-growth, one feature of activity of coumarin is similarity to action of 2,4-D and other phytocidal agents of heteroauxin class
REFERENCE: Audus, L.J. and J.H. Quastel, "Coumarin as a Selective Phytocidal Agent," Nature 159(4036):320-324 (1947).

<4521>
<4521>
CHEMICAL NAME: 1-Butanamine
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1, 10, and 100 ppm
APPLICATION METHODS: 5 ml solution added to germinating seed in Petri dish
EXPERIMENTAL CONDITIONS: Seeds germinated then transferred to Petri dish; treatment solution added, root growth observed
EFFECTS: 92, 102, and 100% wheat root growth at 1, 10, and 100 ppm respectively
COMMENTS: Petri dish test results expressed as percent root growth of control
REFERENCE: Pizey, J.S. and R.L. Wain, "Pre-emergent Herbicidal Activity of Some Substituted Amides and Related Compounds," J. Sci. Food Agric. 10:577-584 (1959).

<4522>
CHEMICAL NAME: 1-Butanesulfonamide, nonafluoro-N-(2,4-difluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4523>
CHEMICAL NAME: 1-Butanesulfonamide, nonafluoro-N-(3-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI);Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4524>
CHEMICAL NAME: 1-Butanesulfonamide, nonafluoro-N-(4-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI);Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4525>
CHEMICAL NAME: 1-Butanesulfonamide, nonafluoro-N-[4-(methylthio)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI);Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment

<4525> CONT.
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4526>
CHEMICAL NAME: 1-Butanesulfonamide, nonafluoro-N-phenyl-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4527>
CHEMICAL NAME: 1-Butanol
CHEMICAL COMMON NAME: Butyl alcohol
PLANT: Stramonium (DATURA INNOXIA)
EXPERIMENTAL DOSE: 9, 12, and 15% for one hr; normal and tertiary
APPLICATION METHODS: Immersion of seeds in assay solutions one hr
EXPERIMENTAL CONDITIONS: Laboratory study; flower buds collected and studied
EFFECTS: Chromosome aberrations in both butyl alcohol solutions
COMMENTS: Formation of chromatid bridges with fragments suggest inversion; occurrence of few polyploid cells with 48 univalents may be due to failure of cytokinesis, suggesting that alcohol treatment, followed by temperature shock, widened scope for induction of polyploidy
REFERENCE: Khosla, S.N. and P. Singh, "Effect of Certain Alcohols on Cytology of DATURA INNOXIA Mill.," Experimentia 30:309-310 (1974).

<4528>
CHEMICAL NAME: 1-Cyclopentenylacetate, methyl-2-pentyl-3-oxo-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 6.7 X 10 (-4) M
APPLICATION METHODS: Seeds germianted in test solution
EXPERIMENTAL CONDITIONS: 10 Seeds per beaker of test solution, one replicate beaker per test; germination and radicle length recorde after 48 to 72 hr growth at 22 plus/or minus 2 C and low intensity light; control--100% germination with radicle length of 29 mm; percent inhibition of elongation determined--100 X (radicle length, control minus radicle length, test) divided by radicle length, control
EFFECTS: Percent radicle elongation inhibition, 76; percent germination, 60
REFERENCE: Ravid, U., R. Ikan, and R. M. Sachs, "Structures Related to Jasmonic Acid and Their Effect on Lettuce Seedling Growth," J. Agric. Food Chem., 23(5):835-838 (1975).

<4529>
CHEMICAL NAME: 1-Decene
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Moderate damage of leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<4530>
<4530>
CHEMICAL NAME: 1-Decene
CHEMICAL COMMON NAME: Normal-decene-1
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: LD(50) for bean at 10x10(-5)M
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<4531>
CHEMICAL NAME: 1-Dodecanamine, cmpd. with 2,4,6-trinitrophenol (1:1)
CHEMICAL COMMON NAME: TD-211
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 50% WP formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Temporary leaf tip burn and chlorosis, plants normal 2 weeks after third treatment
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<4532>
CHEMICAL NAME: 1-Dodecanaminium, N,N,N-trimethyl-, chloride
CHEMICAL COMMON NAME: Alicop
PLANT: Pondweed, sago (POTOMOGETON PECTINATUS); Pondweed, horned (ZANNICHELLIA PALUSTRIS); Pondweed, American (POTOMOGETON NODOSUS); Pondweed, curly-leaf (POTOMOGETON CRISPUS)
EXPERIMENTAL DOSE: Mixture of Aliquat-4 and copper sulfate; Aliquat-4 at 0.08 to 2.35 mg/l.; coppersulfate at 0.05 to 4.45 mg/l.
APPLICATION METHODS: Mixture injection; 11 gal Alignat-4; 164 lb copper; injected into 28,000 acre/ft water
EXPERIMENTAL CONDITIONS: Field study; temperature--71 F; pH--8.8; conductivity--190 micromho; DO--11.2 ppm; allcalinity--55 ppm
EFFECTS: Partial control of pondweeds--50 % died or showed signs of dying within 10 days
COMMENTS: Longer contact time recommended for more effective control; no adverse effects on fish noted; bentonite clay used to precipitate toxicant
REFERENCE: Archer, B.J. and R. Bachman, "Experimental Application of Aliquat-4 and Copper for Control of Pondweeds," J. Am. Water Works Assoc.

<4533>
CHEMICAL NAME: 1-Dodecanaminium, N,N,N-trimethyl-, chloride
CHEMICAL COMMON NAME: N-dodecyl trimethyl ammonium chloride
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 5.0 and 10.0 ppmw
APPLICATION METHODS: Injected under surface of water by spray nozzle at 120 psi
EXPERIMENTAL CONDITIONS: Field study; naiads growing in 2 locations in FL; time period--1960 to 1962
EFFECTS: Moderate control of naid at 10 ppmw for 12 wk
COMMENTS: Most promising of 13 herbicides for control of southern naiad were acrolein, endothall, diquat, and paraquat; acrolein and endothall gave most rapid kill of southern naiad but retreatment necessary at end of 16 weeks
REFERENCE: Blackburn, R.D. and L.W. Weldon, "Control of Southern Naiad in Florida Drainage and Irrigation Channels," Weeds 12(4):295-298 (1964).

<4534>
CHEMICAL NAME: 1-Ethanesulfonamide, pentafluoro-N-(2,4-difluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4535>
CHEMICAL NAME: 1-Ethanesulfonamide, pentafluoro-N-[3-(methylthio)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4536>
CHEMICAL NAME: 1-Ethanesulfonamide, pentafluoro-N-[4-(methylsulfinyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4537>
CHEMICAL NAME: 1-Ethanesulfonamide, pentafluoro-N-[4-(methylsulfonyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4538>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-(2,5-dimethylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4539>
<4539>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-amino-4-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4540>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-bromo-4-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4541>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-bromo-4-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4542>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-chloro-3-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4543>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-chloro-4-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4544>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-chloro-4-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4545>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-chloro-5-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4546>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-chloro-5-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4547>
<4547>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-fluoro-4-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4548>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-fluoro-5-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4549>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-methoxy-5-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4550>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-methoxy-5-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4551>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-methyl-3-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4552>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-methyl-4-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4553>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-methyl-5-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4554>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2-methyl-6-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4555>
<4555>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2,3-dichlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4556>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2,3-dimethylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4557>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2,4-dibromophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A; soybeans--10 lb/A; corn--10 lb/A; cotton--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill; cotton--no effect; soybeans--greater than or equal to 50% kill; corn--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4558>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2,4-dichlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A; soybeans--10 lb/A; corn--2.5 lb/A; cotton--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill; cotton--greater than or equal to 50% kill; soybeans--no effect; corn--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4559>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2,4-difluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Grasses; Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A; soybeans--10 lb/A; corn--2.5 lb/A; cotton--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill; cotton--greater than or equal to 50% kill; soybeans--greater than or equal to 50% kill; corn--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4560>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2,4-dimethoxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4561>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2,4-dimethylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4562>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2,4-dinitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4563>
<4563>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2,5-dibromophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4564>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2,5-dichlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4565>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2,5-difluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4566>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2,5-dimethoxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4567>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(2,6-dichlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4568>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(3-acetamido-4-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4569>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(3-acetamido-4-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4570>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(3-amino-4-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4571>
<4571>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(3-amino-4-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4572>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(3-chloro-2-methoxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4573>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(3-chloro-4-fluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4574>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(3-chloro-4-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4575>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(3-fluoro-4-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4576>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(3,4-dichorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4577>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(3,4-dichorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4578>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(3,4-dimethylphenyl)
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4579>
<4579>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(3,5-dichlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4580>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(3,5-dimethylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4581>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(4-amino-2-bromophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4582>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(4-amino-2-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4583>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(4-amino-2-methoxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4584>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(4-amino-2-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4585>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(4-chloro-2-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4586>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(4-chloro-3-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4587>
<4587>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(4-chloro-3-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4588>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(4-fluoro-2-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4589>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(4-fluoro-3-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4590>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(4-fluoro-3-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4591>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(4-methyl-2-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4592>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(4-methyl-3-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4593>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(5-acetamide-2-methoxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4594>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(5-acetamido-2-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4595>
<4595>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(5-acetamido-2-fluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4596>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(5-amino-2-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4597>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(5-amino-2-methoxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4598>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(5-chloro-2-methoxyphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4599>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(5-chloro-2-nitrophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4600>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-(5-fluoro-2-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4601>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[2-bromo-5-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4602>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[2-chloro-5-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4603>
<4603>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[2-fluoro-5(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4604>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[2-nitro-4-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4605>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[2,4-di(methylsulfonyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lbl/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4606>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[2,4-di(methylthio)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--10 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4607>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[3-acetamido-4-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4608>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[3-chloro-2-(methylthio)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4609>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[3,5-di(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds groups as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4610>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[4-(methylthio)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4611>
<4611>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[4-amino-2-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4612>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[4-bromo-2-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4613>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[4-bromo-3-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4614>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[4-chloro-2-trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4615>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[4-chloro-3-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4616>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[4-fluoro-2-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4617>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[4-fluoro-3-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4618>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[4-methylsulfinyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4619>
<4619>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-[4-nitro-2-(trifluoromethyl)phenyl]-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--5 lb/A; broadleaf weeds--2.5 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted, 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4620>
CHEMICAL NAME: 1-Ethanesulfonamide, 2,2,2-trifluoro-N-phenyl-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4621>
CHEMICAL NAME: 1-Imidazolidinecarboxamide, N-(2-methylpropyl)-2-oxo-
CHEMICAL COMMON NAME: Bay 94871
PLANT: Strawberry (FRAGARIA sp.); Chickweed, common (STELLARIA MEDIA); Knotweed (POLYGONUM AVICULARE); Bird's eye (VERONICA PERSICA); Fumitory, common (FUMARIA OFFICINALIS)
EXPERIMENTAL DOSE: 2.5 and 7.5 kg/ha
APPLICATION METHODS: Plants sprayed at volume of 400 l./ha; 80% WP formulation; applied preemergence to weeds--2 experiments
EXPERIMENTAL CONDITIONS: Randomized block design with 4 replications; 1 x 1 m plot size with 9 strawberry plants per plot; sandy loam soil; crop and weed tests conducted separately
EFFECTS: Strawberry--marginal chlorosis and slight necrosis of leaves, symptoms were outgrown; no weeds controlled at 2.5 kg/ha; V. PERSICA controlled in both tests at 7.5 kg/ha and S. MEDIA controlled in one test at 7.5 kg/ha; P. AVICULARE and F. OFFICINALIS not controlled at 7.5 kg/ha
REFERENCE: Clay, D.V. and S.J. Rutherford, "New Herbicides for Strawberries: Crop Tolerance and Weed Control Performance," Proc. Brit. Weed Control Conf. 12:699-707 (1974).

<4622>
CHEMICAL NAME: 1-Naphthaleneacetic acid
CHEMICAL COMMON NAME: NAA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 20 and 40 g/ha (50 and 100 ppm, respectively)
APPLICATION METHODS: Foliage spray, 400 l./ha
EXPERIMENTAL CONDITIONS: Tubers planted in pots, shoots emerged in 7-8 days; spraying after shoot establishment; pots placed in randomized blocks
EFFECTS: No significant effect on shoot or tuber number
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<4623>
CHEMICAL NAME: 1-Naphthaleneacetic acid
CHEMICAL COMMON NAME: NAA
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 20.0 and 40.0 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: No adverse effects noted
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<4624>
CHEMICAL NAME: 1-Naphthaleneacetic acid
CHEMICAL COMMON NAME: NAA
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 20, 200, and 2000 ppm
APPLICATION METHODS: Postemergence--2 ml solution sprayed on each pot each week
EXPERIMENTAL CONDITIONS: Greenhouse study; effect on flowering studied
EFFECTS: Significant reduction in flowers per plant, more pronounced at high concentration
REFERENCE: Youngner, V.B. and J.R. Goodin, "Control of PENNISETUM CLANDESTINUM, Kikuyugrass," Weeds 9(2):238-242 (1961).

<4625>
CHEMICAL NAME: 1-Naphthaleneacetic acid
CHEMICAL COMMON NAME: NAA, alpha
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 500 micro M
APPLICATION METHODS: Addition to assay preparations of chloroplasts
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: No photochemical or photobleaching effects noted
COMMENTS: Dual wavelength spectrophotometry applied to observations of small spectral changes during biochemical reactions in intact tissue; based on principle that absorbance reading at wavelength of isobestic point of reaction fluctuates with time in same manner as reading at wavelength where an absorbance change due to reaction takes place
REFERENCE: Inoue, Y., Yaginuma, N., Ogawa, T., Konishi, K., and K. Shibata, "Spectral Changes of Chloroplasts as a Means to Examine Phytotoxic Effects of Herbicides," in Environmental Toxicology of Pesticides, F. Matsumura, G.M. Boush, and T. Misato (Eds.) Academic Press, New York and London, pp. 549-570 (1972).

<4626>
CHEMICAL NAME: 1-Naphthaleneacetic acid
CHEMICAL COMMON NAME: NAA
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 5.28 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<4627>
CHEMICAL NAME: 1-Naphthalenol
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 56.8 mg/l.
EXPERIMENTAL CONDITIONS: Lateral roots used; mitotic index of control, 147
EFFECTS: Percentage of abnormal mitotic cells, 3.26%; mitotic index, 97
COMMENTS: Induced types of abnormalities--(1) disturbed type (disturbed metaphases, prophase-metaphases and disturbed ana-telophases) (2) lagging chromosomes, (3) stickiness, (4) fragmentation, and (5) cytomixis; tables in paper indicate percentages of each
REFERENCE: Amer, S.M. and E.M. Ali, "Cytological Effects of Pesticides IV. Mitotic Effects of Some Phenols," Cytologia 34:533-540 (1969).

<4628>
CHEMICAL NAME: 1-Naphthalenol, methylcarbamate
CHEMICAL COMMON NAME: Carbaryl
PLANT: Tinda (CITRULLUS VULGARIS); Bottlegoard; Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.03 and 0.04 %
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Slight leaf spot development on two species at either concentration; no injury to tinda
COMMENTS: Safe (non-phytotoxic) insecticides on the cucurbits were DDVP, carbaryl, malathion, endosulfan, thiometon, and phosphamidon
REFERENCE: Sood, N.K., U.K. Kaushik, and V.S. Rathore, "Phytotoxicity of Modern Insecticides to Cucurbits," Indian J. Hort. 29(1):111-113 (1972)

<4629>
CHEMICAL NAME: 1-Naphthalenol, methylcarbamate
CHEMICAL COMMON NAME: Carbaryl
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.6 lb/A
APPLICATION METHODS: Postemergence spray; 4 gal/tree at 350 psi; repeat (3) applications; 80% WP Formulation
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: No adverse effect on peach fruit set
COMMENTS: Fruit counts with methyl parathion and azinphosmethyl significantly lower than control; carbaryl

<4629>
<4629> CONT.
and monocrotophos treatments also less, but differences not statistically significant; no obvious differences in fruit size at maturity in various treatments, although fruit from trees sprayed with methyl parathion seemed 1-2 days slower in maturing
REFERENCE: Rice, R.E. and R.A. Jones, "Reduction of Fruit Set by Repeated Applications of Selected Insecticides to Peaches," Environ. Entom. 1(5):677-678 (1972).

<4630>
CHEMICAL NAME: 1-Naphthalenol, methylcarbamate
CHEMICAL COMMON NAME: Carbaryl
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Pea, sweet (PISUM SATIVUM); Rice (LEERSIA ORYZOIDES); Corn (ZEA MAYS); Kenaf; Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 1, 5 and 10% solution
APPLICATION METHODS: Formulation--85% micronized WP; application by soaking seeds in water dilutions
EXPERIMENTAL CONDITIONS: Seeds soaked for 1, 2, 3, 4 and 5 hours at 25 C; seeds transferred to planting dishes and left under standerized temperature--18 C for pea and radish, 30 C for others; 4 replicates for each treatment--100 rice seeds, 50 cotton, Kenaf and radish seeds, 25 pea and corn seeds; observations for germination and growth
EFFECTS: Germination--stimulation of germination at 1%, most evident in peas (130% germination at 5 hr), at 5% maize germination decreased more than other plants (90% germination at 5 hr), stimulation still evident at 5% in all plants in at least one exposure trial (pea plants showed 183% germination at 5 hr), maize germination also decreased the most at 10% concentration (50% decrease at 5 hr), kenaf the least affected at 10% (4% decrease at 5 hr); growth--decrease in all plants but no cases of no growth, maize and peas affected the greatest (about 70% decrease at 10% at 5 hr), kenaf and cotton probably the least (23 and 18% decrease respectively at 10% at 5 hr), some growth stimulation observed particularly in rice
REFERENCE: Eid, A., B.F. Hanna, R.K. Mohammed, G.M. Amin, A.M. Ali and I.I. Guirguis, "Toxic Effect of Insecticides on Seeds," Agric. Res. Rev. 49(1):46-54 (1971).

<4631>
CHEMICAL NAME: 1-Naphthalenol, methylcarbamate
CHEMICAL COMMON NAME: Carbaryl
PLANT: Cabbage, Chinese (BRASSICA PEKINENSIS)
EXPERIMENTAL DOSE: 1.0 kg/ha
APPLICATION METHODS: Insecticidal spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; pollen collected at various times after application; evaluation time--6 hr to 21 da
EFFECTS: Significant pollen sterility for 6 hr to 14 da
COMMENTS: Most insecticides affected pollen viability only for first 4-5 days, except a few which affected it even up to 12 or 15 days
REFERENCE: Lal, O.P., "Insecticidal Sprayings Causing Pollen Sterility in Chinese Cabbage," Act. Agron. Acad. Scient. Hungar. 24:145-147 (1975).

<4632>
CHEMICAL NAME: 1-Naphthalenol, methylcarbamate
CHEMICAL COMMON NAME: Carbaryl
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.10, 0.15, and 0.20%
APPLICATION METHODS: As spray in 625 l./ha of spray material; postemergence on 42-day old crop
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: Safe at all rates
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadyan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<4633>
CHEMICAL NAME: 1-Naphthalenol, methylcarbamate
CHEMICAL COMMON NAME: Carbaryl
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 50% WP formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Temporary chlorosis
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125 and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<4634>
CHEMICAL NAME: 1-Naphthalenol, methylcarbamate
CHEMICAL COMMON NAME: Carbaryl
PLANT: (APHELANDRA SQUARROSA); Schefflera (BRASSAIA ACTINOPHYLLA); Palm, parlour (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Dracena (DRACAENA SANDERIANA); Prayer plant (MARANTA LEUCONEURA); Sword-fern (NEPHROLEPIS EXALTATA); Peperomia (PEPEROMIA OBTUSIFOLIA); Cordatum (PHILODENDRON OXYCARDIUM); Golden pothos (SCINDAPSUS AUREUS)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/100 gal
APPLICATION METHODS: Amount formulated--1.25 and 2.5 lb respectively; 4 treatments at 7-day intervals
EXPERIMENTAL CONDITIONS: Leaf surfaces sprayed to drip point using 1 or 2 gal compressed air sprayer at 10 psi (200 gal/A volume equivalent); Plyac (spreader-sticker) added to controls and treatments at rate of 2 oz/100 gal water; sprays applied prior to 10:00 a.m.; 5 tests from May to November; temperature--83 to 98 F (day) and 56 to 78 F (night); greenhouse conditions
EFFECTS: A. SQUARROSA--no injury at 1.0 lb, moderate injury at 2.0 lb (leaf deformity); B. ACTINOPHYLLA--moderate injury at 1.0 lb (leaf deformity), severe injury at 2.0 lb (leaf deformity); no injury to other plants; powder like residue on all plants at 2.0 lb
COMMENTS: Experimental concentrations--recommended and twice the recommended rate
REFERENCE: Hamlen, R.A. and R.W. Henley, "Phytotoxicity to Tropical Foliage Plants of Repeated Insecticide and Miticide Applications Under Fiberglass-Covered Greenhouse Conditions," Proc. Fla. State Hort. Soc. 89:336-338 (1976).

<4635>
CHEMICAL NAME: 1-Naphthalenol, methylcarbamate
CHEMICAL COMMON NAME: Carbaryl
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 1.0 to 5.0 mg/pot; 85% WP
APPLICATION METHODS: Added to soil surface
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--27 to 37 C; evaluation time--2 to 17 wk; soil from paddy rice field
EFFECTS: Growth reduction of rice with enzyme inhibition and no effect on barnyard grass
COMMENTS: Activity of propanil-hydrolyzing enzyme in rice indicated slow increase in rate of hydrolysis during early stages of growth, followed by sharp increase for extracts of 7-week-old samples; rate of hydrolysis reached maximum at harvest time (approximately 17 weeks); enzyme activity of barnyard grass not detected at different growth stages
REFERENCE: El-Refai, A. and M.M. Mowafy, "Propanil Hydrolysis: Inhibition in Rice Plants by Diazinon and Carbaryl Translocated From the Soil," J. Assoc. Off. Analy. Chem. 56(4):1178-1182 (1973).

<4636>
CHEMICAL NAME: 1-Naphthalenol, methylcarbamate
CHEMICAL COMMON NAME: Sevin
PLANT: Pine, Norfolk Island (ARAUCARIA EXCELSA); Copperleaf, Virginia (ACALYPHA VIRGINICA); Fern, Sprengeri asparagus (ASPARAGUS SPRENGERI); Schefflera (BRASSAIA ACTINOPHYLLA); Black olive; Palm, Madagascar (CHRYSALIDOCARPUS LUTESCENS); Sea grape (COCCOLOBA UVIFERA); Croton, gold dust (CODIAEUM VARIEGATUM); False aralia (LICYGOTHECA ELEGANTISSIMA); Dracaena, red edge (DRACAENA MARGINATA); Fig, Benjamin (FICUS BENJAMINA); Laurel, Cuban (FICUS RETUSA); Hibiscus, yellow (HIBISCUS CALYCINUS); Rose mallow (HIBISCUS ROSA-SINENSIS); Red ixora (IXORA COCONEA); Jasmine, Wax (JASMINUM VOLUBILE); Privet (LIGUSTRUM JAPONICUM); Jessamine, Chalcas, orange (MURPAYA PANICULATA); Patient Mary (IMPATIENS SULTANI); Pittosporum (PITTOSPORUM TOBIRO); Podocarpus (PODOCARPUS MACROPHYLLA); Viburnum (VIBURNUM SUSPENSUM); Palm, Christmas (VEITCHA MERILLI)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/100 gal (1X and 2X recommended rate)
APPLICATION METHODS: Foliar spray; 3 applications once a week; sprayed to run-off at 40 psi
EXPERIMENTAL CONDITIONS: Field study; pot culture; slat shading; evaluation time -- up to 5.5 wk
EFFECTS: Slight damage of copperleaf, schefflera, olive, laurel, hibiscus, and jessamine; no damage to remaining plants
COMMENTS: Araucaria, asparagus, chrysalidocarpus, coccoloba, codiaeum, dizygotheca, dracaena, philodendron, pittosporum, podocarpus, and veitcha tolerated most or all of these materials with essentially no damage; acalypha, brassaia, bucida, ficus, hibiscus, ligustrum, and viburnum were sensitive to many or all of the materials; at recommended rates, diazinon and carbaryl produced the least number of phytotoxic symptoms on the least number of species
REFERENCE: Weel, P.L. and J.A. Reinert, "Phytotoxicity Evaluations of Ten Insecticides on Twenty-Three Species of Ornamental Plants Under Slat Shed Conditions," Proc. Fla. State Hortic. Soc. 88:586-590 (1976).

<4637>
CHEMICAL NAME: 1-Naphthalenol, methylcarbamate
CHEMICAL COMMON NAME: Carbaryl
PLANT: Cucumber (CUCUMIS SATIVUS); Tomato (LYCOPERSICON ESCULENTUM); Potato (SOLANUM TUBEROSUM); Pepper, sweet (CAPSICUM FRUTESCENS)
EXPERIMENTAL DOSE: 2.24 kg/ha; 85% WP
APPLICATION METHODS: Preplant and preemergence sprays; 444 l./ha
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted
COMMENTS: Preplanting treatments of chlorpyrifos and leptophos caused no phytotoxicity to peppers, cucumbers, tomatoes or potatoes and only the latter contained detectable residues of chlorpyrifos, leptophos and/or their degradation products at harvest; postplanting row treatments of chlorpyrifos, leptophos, N2596 and WL24073 effective depending on insecticide and crop; insecticides phytotoxic to peppers, tomatoes or potatoes
REFERENCE: Harris, C.R., H.J. Svec, W.W. Sans, A. Hikichi, S.C. Phatak, R. Frank, and H.E. Braun, "Efficacy, Phytotoxicity, and Persistance of Insecticides Used as Pre- and Postplanting Treatments for Control of Cutworms Attacking Vegetables in Ontario," Proc. Ent. Soc. Ont. 105:65-74 (1975).

<4638>
<4638>
CHEMICAL NAME: 1-Naphthalenol, 2,4-dichloro-
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 21.7, 43.5, and 87.0 mg/l.
EXPERIMENTAL CONDITIONS: Lateral roots used; mitotic index of control, 110
EFFECTS: Percentage of abnormal mitotic cells--5.75, 3.54, and 1.70% at 87.0, 43.5, and 21.7 mg/l., respectively; mitotic index--40, 83, and 87 at 87.0, 43.5, and 21.7 ml/l., respectively
COMMENTS: Induced types of abnormalities--(1) disturbed type (disturbed metaphases, prophase-metaphases and disturbed ana-telophases), (2) lagging chromosomes, (3) stickiness, (4) fragmentation, and (5) cytomixis; tables in paper indicate percentages of each
REFERENCE: Amer, S.M. and E.M. Ali, "Cytological Effects of Pesticides IV. Mitotic Effects of Some Phenols," Cytologia 34:533-540 (1969).

<4639>
CHEMICAL NAME: 1-Octanesulfonamide, heptadecafluoro-N-(4-chlorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI);Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4640>
CHEMICAL NAME: 1-Octanesulfonamide, heptadecafluoro-N-(4-methylphenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI);Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--20 lb/A; broadleaf weeds--20 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--no effect; broadleaf weeds--no effect
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-n-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<4641>
CHEMICAL NAME: 1-Octene
CHEMICAL COMMON NAME: N-oct-I-ene
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapse and therefore toxic effect.
EFFECTS: Severe damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<4642>
CHEMICAL NAME: 1-Pentanethiol
CHEMICAL COMMON NAME: Pentane-I-thiol
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: Greater than 99.5% in general
APPLICATION METHODS: Solution soak of leaves (5g fresh wt); 2 ml test solution pipetted onto abaxial surface of leaf
EXPERIMENTAL CONDITIONS: Laboratory study; leaves immediately immersed in deionized water and conductivity measured to give indication of phytotoxicity; salt release equated with cell collapsed and therefore toxic effect.

<4642> CONT.
EFFECTS: No damage to leaf cells of sunflower
COMMENTS: Effects on leaves of number of plant species by members of homologous series of hydrocarbons and certain of their oil-soluble derivatives based on changes in conductance of aqueous systems when hydrocarbon-treated leaves added; results compared with previous phytotoxicity studies where hydrocarbons were applied to plants in vapour and in aqueous treatments; relationship between conductance changes and physical properties of the applied hydrocarbons suggested.
REFERENCE: Boyles, D. T., "The Loss of Electrolytes From Leaves Treated With Hydrocarbons and Their Derivatives," Ann. Appl. Biol. 83(1):103-113 (1976).

<4643>
CHEMICAL NAME: 1-Phenanthrenemethanamine, 1,2,3,4,4a,9,10,10a,-octahydro-1,4a-dimethyl-7-(1-methylethyl)-, acetate, [1R-(1 alpha, 4a beta, 10a alpha)]-
CHEMICAL COMMON NAME: Dehydroabietylamine acetate
PLANT: Waterweed, Brazilian (ANACHARIS DENSA)
EXPERIMENTAL DOSE: 1, 5, and 10 ppm
APPLICATION METHODS: Addition of solutions to jars in which plants were growing
EXPERIMENTAL CONDITIONS: Laboratory study; plants rooted for 2 wk before treatment solutions added; evaluation time--up to 21 days
EFFECTS: Effective control after 14 days at 5 ppm
COMMENTS: Brief description of laboratory method for screening water weed herbicides
REFERENCE: Hardcastle, W.S., "A Rapid Laboratory Method for Screening Herbicides against Aquatic Plants," Weeds 6(1):64-65 (1958).

<4644>
CHEMICAL NAME: 1-Piperidinecarbothioic acid, 5-ethyl-2-methyl-, S-(1-methylethyl) ester
CHEMICAL COMMON NAME: R-12001
PLANT: Millet, Japanese (ECHINOCHLOA CRUSGALLI); Sorghum, grain (SORGHUM BICOLOR); Nutsedge, yellow (CYPERUS ESCULENTUS); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.68 and 3.36 kg/ha
APPLICATION METHODS: Preplant spray; 37 dkl./ha; soil incorporated (10 cm depth)
EXPERIMENTAL CONDITIONS: Field study; soil--Hespera sandy loam and Hespera loamy sand; evaluation time--2 and 5 wk and harvest; sorghum and millet used as bioassay plants in persistence evaluation
EFFECTS: Effective control of nutsedge and severe damage to millet and sorghum with marked yield reduction of seed cotton at both rates
COMMENTS: All herbicides controlled nutsedge for at least 1 month in two or more experiments; cotton most tolerant to applications of CP-53619, of prometryne, of San-6706, and of methazole; higher rates of San-6706, and methazole and all rates of alachlor, R-7465, and R-12001 reduced yield of cotton in one or more experiments
REFERENCE: Keeley, P.E., J.H. Miller, and C.H. Carter, "Weed and Cotton Response to Several Herbicides," Weed Sci. 21(4):327-329 (1973).

<4645>
CHEMICAL NAME: 1-Piperidinecarbothioic acid, 5-ethyl-2-methyl-, S-(1-methylethyl) ester
CHEMICAL COMMON NAME: R-12001
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Cotton (GOSSYPIUM HIRSUTUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.12, 2.24, and 4.48 kg/ha
APPLICATION METHODS: Soil surface spray (preplant) with incorporation; 56 dkl/ha; depth--6.35 cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Hesperia fine sandy loam; temperature--27 to 31 C; nutsedge tubers and cotton seed planted; plastic container culture; evaluation time--up to 8 wk
EFFECTS: Effective control of yellow nutsedge; slightly less effective against purple nutsedge; cotton fairly tolerant to CP-53619
COMMENTS: All treatments except lowest rate of alachlor and VCS-438 controlled yellow nutsedge for 8 weeks; these and other compounds less effective against purple nutsedge; all herbicides moderately to severely damaged cotton except CP-53619 and R-7465
REFERENCE: Keeley, P.E., C.H. Carter, and J.H. Miller, "Evaluation of the Relative Toxicity of Herbicides to Cotton and Nutsedge," Weed Sci. 20(1):71-74 (1972).

<4646>
CHEMICAL NAME: 1-Piperidinecarbothioic acid, 5-ethyl-2-methyl-, S-(1-methylethyl) ester
CHEMICAL COMMON NAME: R-12001
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 3.0 and 6.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Poor sesame tolerance and fair barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<4647>
CHEMICAL NAME: 1-Propanone, 1-[2,3-dihydro-1,1-dimethyl-4,6-bis(1-methylethyl)-1H-inden-5-yl]-, mixt. with 1-[2,3-dihydro-3,3-dimethyl-5,7-bis(1-methylethyl)-1H-inden-4-yl]-1-propanone
CHEMICAL COMMON NAME: Sindone
PLANT: Nightshade, black (SOLANUM NIGRUM); Marigold, corn (CHRYSANTHEMUM SEGETUM)
EXPERIMENTAL DOSE: 100 mg/sq m
APPLICATION METHODS: Postemergence spray treatments; volume equivalent of sprayer, 100 mg/sq m
EXPERIMENTAL CONDITIONS: Seeds sown in 80% clay and 20% peat soil mixture; greenhouse germinated with 20 to 26 C daylight temperature and 18-20 C night temperature, 16-hr photoperiod; seedlings transplanted 10 to 21 days after sowing
EFFECTS: Nightshade--mild (20-30%) leaf deformation; marigold--moderate (31-70%) leaf deformation

<4647>
<4647> CONT.
COMMENTS: Correlation of callus toxicity with seedling toxicity also reported--researchers note potential use of callus cultures to assess phytotoxicity
REFERENCE: Zilkah, S., P. R. Bocion, and J. Gressel, "Cell Cultures vs. Whole Plants For Measuring Phytotoxicity II. Correlatiions Between Phytotoxicity in Seedlings and Calli," Plant Cell Physiol. 18:657-670 (1977).

<4648>
CHEMICAL NAME: 1-Propanone, 1-[2,3-dihydro-1,1-dimethyl-4,6-bis(1-methylethyl)-1H-inden-5-yl]-, mixt. with 1-[2,3-dihydro-3,3-dimethyl-5,7-bis(1-methylethyl)-1H-inden-4-yl]-1-propanone
CHEMICAL COMMON NAME: Sindone
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Poor sesame tolerance and poor barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<4649>
CHEMICAL NAME: 1-Propanone, 1-[2,3-dihydro-1,1,4-trimethyl-6-(1-methylethyl)-1H-inden-5-yl]-, mixt. with 1-[2,3-dihydro-3,3,7-trimethyl-5-(1-methylethyl)-1H-inden-4-yl]-1-propanone
CHEMICAL COMMON NAME: Sindone-B
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Broadleaf weeds
EXPERIMENTAL DOSE: 3.4 kg/ha
APPLICATION METHODS: Preplanting treatments incorporated to 5.1 cm depth; September treatments
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Serious injury to clover and alfalfa; broadleaf weeds effectively controlled
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<4650>
CHEMICAL NAME: 1-Propanone, 1-phenyl-4-hydroxy-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Slight phytotoxic effect of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<4651>
CHEMICAL NAME: 1-Propanone, 1[2,3-dihydro-1,1,4-trimethyl-6-(1-methylethyl)-1H-inden-5-yl]-, mixt. with 1-[2,3-dihydro-3,3,7-trimethyl-5-(1-methylethyl)-1H-inden-4-yl]-1-propanone
CHEMICAL COMMON NAME: Sindone-B
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Plants
EXPERIMENTAL DOSE: 1.0 to 6.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; time period--1967 to 1969; soils--Ramona sandy loam and Greenfield
EFFECTS: Moderate control of all weeds at 4.0 and 6.0 lb/A with moderate to severe damage to asparagus
COMMENTS: Chemicals which killed or severely damaged asparagus include monuron, diuron, simazine, sinbar, sindone-b, treflan, tenoran, and CIPC; vegiben marginal; of herbicides tested in these trials for pre-emergence weed control in direct-seeded asparagus, balan, bensulide, and brominal offer most promising results
REFERENCE: Whiting, F.L., F.H. Takatori, and J.M. Lyons, "Weed Control in Asparagus," Calif Agric. 25(1):4-5 (1971).

<4652>
CHEMICAL NAME: 1-Propanone, 1[2,3-dihydro-1,1,4-trimethyl-6-(1-methylethyl)-1H-inden-5-yl]-, mixt. with 1-[2,3-dihydro-3,3,7-trimethyl-5-(1-methylethyl)-1H-inden-4-yl]-1-propanone
CHEMICAL COMMON NAME: Sindone-B
PLANT: Junglerice (ECHINOCHLOA COLONUM); Foxtail (SETARIA sp.); Sandbur (CENCHRUS sp.); Thistle, Russian (SALSOLA KALI); Cocklebur (XANTHIUM sp.); Dandelion (TARAXACUM sp.); Goathead (TRIBULUS TERRESTRIS); Sunflower (HELIANTHUS sp.); Horsenettle (SOLANUM ELAEAGNIFOLIUM); Pepper, Chile
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Preplanting incorporated treatments
EXPERIMENTAL CONDITIONS: Plot, one 30-ft row; 3-year experiments; randomized block design with 3 replications the first year and 5 replications the second and third years; weed counts made one month after planting; irrigation and hoeing as needed
EFFECTS: Hoeing time of 27 and 22 hrs/A at 2 and 4 lb/A, respectively, compared to untreated control hoeing time of 65 hr/A; 90 and 87% yield at 2 and 4 lb/A, respectively, compared to control
COMMENTS: Weed population reduced but percentage not reported
REFERENCE: Trujillo, P.M. and J.W. Whitworth, "Weed Control in Chile Peppers at the Espanola Valley Branch Station," New Mexico State Univ. Agric. Exper. Station Res. Rep. 213:1-4 (1971).

<4653>
CHEMICAL NAME: 1-Propene, 1,3-dichloro-
PLANT: Orange, sweet (CITRUS SINENSIS)
EXPERIMENTAL DOSE: 31.2 to 250 micro g/g (soil)
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--21 to 27 C; evaluation time--80 da; sterile and nonsterile soil studied
EFFECTS: At 62.5 micro g/g and higher concentrations, death of orange seedlings in sterilized and nonsterilized soil
COMMENTS: Toxicity of fumigant residues to sweet orange seedlings due mainly to chloroallyl alcohol, a degradation product of 1,3-D
REFERENCE: Baines, R.C., L.J. Klotz, and T.A. DeWolfe, "Some Biocidal Properties of 1,3-D and its Degradation Product," Phytopathology 67(7):936-940 (1977).

<4654>
CHEMICAL NAME: 1-Propene, 1,3-dichloro-
PLANT: Bindweed, field (CONVOLVULUS ARVENSIS); Tomato (LYCOPERSICON ESCULENTUM); Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 99 to 1560 lb/A
APPLICATION METHODS: Preplant injection; 20 to 200 gal/A
EXPERIMENTAL CONDITIONS: Field study; soils--Oxalis clay and Panoche clay loam; irrigation; varied injection methods; time period--1971 to 1974
EFFECTS: Effective bindweed control at rates low as 156 and 165 lb/A depending on application method with no adverse effect on cantaloupe or tomato yield
COMMENTS: Field bindweed temporarily controlled with fumigants; for effective control, soil conditions must be favorable for uniform application and diffusion of fumigant
REFERENCE: Fischer, B.B. and A.H. Lange, "Control of Field Bindweed in Cropland with 1,3-Dichloropropene Soil Fumigants", Down Earth 31(2):19-24 (1975).

<4655>
CHEMICAL NAME: 1-Propene, 2-methyl-, trimer
CHEMICAL COMMON NAME: Triisobutylene
PLANT: Bean, runner (PHASEOLUS MULTIFLORUS)
EXPERIMENTAL DOSE: Saturation or near-saturation
APPLICATION METHODS: Volitilized vapors; one hr exposure to saturated vapor in bell jar
EXPERIMENTAL CONDITIONS: Laboratory study; detached leaves
EFFECTS: No toxic effect at saturation
COMMENTS: Highly refined oils of low aromatic content generally of low toxicity; oils of moderate aromatic content of moderate toxicity and include most vaporizing oils and white spirits used as selective herbicides; highly aromatic oils, such as aromatic extracts consisting of aromatic compounds removed during the refining of other gractions, generally highly toxic
REFERENCE: Ivens, G.W., "The Phytotoxicity of Mineral Oils and Hydrocarbons," Annals Appl. Biol. 39:418-422 (1952).

<4656>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(2-fluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 1.12 kg/ha, 50% grass control at 17.92 kg/ha; postemergence--80% broadleaf and grass weed control at 0.28 and 2.24 kg/ha, respectively; 100% crop yield
COMMENTS: Effect on nitrite accumulation also reported; substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4657>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(2-methoxyphenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--80% broadleaf and grass control at 2.24 and 8.96 kg/ha, respectively; 56% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4658>

<4658>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(2,3,4,5-tetrafluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilution smade to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 58% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4659>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(2,3,5,6-tetrafluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilution smade to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 24% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4660>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(2,4-dibromophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 78% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4661>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(2,4-difluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 17.92 kg/ha, no grass control; postemergence--80% broadleaf and grass control at 4.48 and 1.12 kg/ha, respectively; 54% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4662>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(2,5-dibromophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control

<4662> CONT.
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 74% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4663>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(2,5-dichlorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--80% broadleaf and grass control at 17.92 kg/ha; 42% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4664>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(2,5-difluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24,4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g ot test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf and grass weed control at 1.12 and 17.92 kg/ha, respectively; postemergence--80% broadleaf leaf and grass weed control at 0.14 and 8.96 kg/ha, respectively; 61% crop yield
COMMENTS: Effect on nitrite accumulation also reported; substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4665>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(2,6-dibromophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 80% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4666>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(3-bromophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24,4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g ot test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf and grass control at 8.96 kg/ha; postemergence--80% broadleaf and grass control at 1.12 and 8.96 kg/ha respectively; 70% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4667>
<4667>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(3-chloro-4-fluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 4.48 kg/ha, no grass control; postemergence--80% broadleaf and grass control at 1.12 and 4.48 kg/ha, respectively; 73% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4668>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(3-chloro-4-methoxyphenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilution smade to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--80% broadleaf and grass weed control at 8.96 and 17.92 kg/ha, respectively; 87% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4669>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(3-chlorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24,4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g ot test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf weed control at 17.92 k/ha, no grass control; postemergence--80% broadleaf and grassweed control at 0.14 and 1.12 kg/ha, respectively; 81% crop yield
COMMENTS: Effect on nitrite accumulation also reported; substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4670>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(3-fluoro-4-methylphenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80 % weed control
EFFECTS: Preemergence--50% broadleaf control at 2.24 kg/ha, no grass control; postemergence--80% broadleaf and grass control at 0.56 and 8.96 kg/ha, respectively; 88% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4671>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(3-fluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24,4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g ot test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing

<4671> CONT.
postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf and grass weed control at 1.12 and 4.48 kg/ha, respectively; postemergence--80% broadleaf and grass weed control at 0.14 and 2.24 kg/ha, respectively; 80% crop yield
COMMENTS: Effect on nitrite accumulation also reported; substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4672>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(3-iodophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 8.96 kg/ha, no grass control; postemergence--80% broadleaf and grass control at 0.56 and 4.48, respectively; 83% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4673>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(3-methoxyphenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--80% broadleaf and grass control at 1.12 and 8.96 kg/ha, respectively; 61% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4674>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(3-methylphenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24,4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g ot test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf weed control at 17.92 kg/ha, no grass control; postemergence--80% broadleaf and grass weed control at 0.28 and 2.24 kg/ha, respectively; 76% crop yield
COMMENTS: Effect on nitrite accumulation also reported; substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4675>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(3-nitrophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--80% broadleaf and grass control at 8.96 and 17.92 kg/ha, respectively; 84% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4676>
<4676>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(3,4-dichlorophenyl)-
PLANT: Sorghum (SORGHUM VULGARE); Ryegrass, perennial (LOLIUM PERENNE); Buckwheat (FAGOPYRUM ESCULENTUM); Zinnia (ZINNIA ELEGANS); Turnip (BRASSICA RAPA); Crowfoot grass (ELEUSINE INDICA); Sedge (CYPERUS sp.); Broadleaf weeds; Grasses; Corn (ZEA MAYS); Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Sida, spiny (SIDA SPINOSA); Mustard, wild (BRASSICA KABER); Velvetleaf (ABUTILON THEOPHRASTI); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentratoins; preemergent and postemergent sprays of 40 ml stock solution for non-field tests; preplanting incorporated aqueous suspensions in field tests
EXPERIMENTAL CONDITIONS: Non-field experiments--23 cm by 23 cm by 5 cm aluminum pans, broadleaf and grass weeds not identified, crops as listed above except corn and alfalfa, application rates ranged from 0.07 to 17.92 kg/ha, criteria for passing preemergence weed control test was 50% control, criteria for passing postemergence test was 80% weed control; field tests--corn and alfalfa, weeds identified, preplanting incorporated treatments, damage assessed 8 weeks later, 4.48, 2.24, 1.12, and 0.56 kg/ha rates
EFFECTS: Preemergence non-field tests--50% broadleaf weed control at 8.96 kg/ha, no grass control; postemergence non-field tests--80% broadleaf and grass weed control at 0.14 and 8.96 kg/ha, respectively; 78% crop yield in non-field test; field tests--100% weed control at 4.48 and 2.24 kg/ha, 90% at 1.12 kg/ha, and 80 and 70% control at 0.56 kg/ha for broadleaf and grass weeds, respectively; no corn injury, moderate alfalfa injury at 4.48 and 2.24 kg/ha, minor alfalfa injury at 1.12 and 0.56 kg/ha
COMMENTS: Effect on nitrite accumulation also reported; substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4677>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(3,4-difluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 0.56 kg/ha, no grass control; postemergence--80% broadleaf and grass control at 0.28 and 0.56 kg/ha, respectively; 60% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4678>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(3,4-dimethylphenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80 % weed control
EFFECTS: Preemergence--no weed control; postemergence--80% broadleaf control at 4.48 kg/ha, no grass control; 81% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4679>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(4-bromo-3-chlorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80 % weed control
EFFECTS: Preemergence--no weed control; postemergence--80% broadleaf and grass control at 2.24 and 4.48 kg/ha, respectively; 61% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4680>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(4-bromophenyl)-
PLANT: Sorghum (SORGHUM VULGARE); Ryegrass, perennial (LOLIUM PERENNE); Buckwheat (FAGOPYRUM ESCULENTUM); Zinnia (ZINNIA ELEGANS); Turnip (BRASSICA RAPA); Crowfoot grass (ELEUSINE INDICA); Sedge (CYPERUS sp.); Broadleaf weeds; Grasses; Corn (ZEA MAYS); Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Sida, spiny (SIDA SPINOSA); Mustard, wild (BRASSICA KABER); Velvetleaf (ABUTILON THEOPHRASTI); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergent and postemergent sprays of 40 ml stock solution for non-field tests; preplanting incorporated aqueous suspensions in field tests
EXPERIMENTAL CONDITIONS: Non-field experimetns--23 cm by 23 cm by 5 cm aluminum pans, broadleaf and grass weeds not identified, crops as listed above except corn and alfalfa, applicaiton rates ranged from 0.07 to 17.92 kg/ha; criteria for passing preemergence weed control test was 50% control, criteria for passing postemergence test was 80% weed control; field tests--corn and alfalfa weeds identified, preplanting incorporated treatments, damage assessed 8 weeks later, 4.48, 2.24, 1.12, and 0.56 kg/ha rates
EFFECTS: Preemergence non-field tests--50% broadleaf weed control at 4.48 kg/ha, no grass control; postemergence non-field tests--80% broadleaf and grass control at 0.28 and 4.48 kg/ha, respectively; 88% crop yield in non-field tests; field tests--excellent weed control at 4.48 kg/ha, moderate control at other rates, no corn injury, minor alfalfa injury at 4.48 and 2.24 kg/ha
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4681>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(4-chlorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24,4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g ot test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf weed control at 17.92 kg/ha, no grass control; postemergence--80% broadleaf and grass weed control at 0.28 and 1.12 kg/ha, respectively; 84% crop yield
COMMENTS: Effect on nitrite accumulation also reported; substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4682>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(4-cyanophenyl)-
PLANT: Sorghum (SORGHUM VULGARE); Ryegrass, perennial (LOLIUM PERENNE); Buckwheat (FAGOPYRUM ESCULENTUM); Zinnia (ZINNIA ELEGANS); Turnip (BRASSICA RAPA); Crowfoot grass (ELEUSINE INDICA); Sedge (CYPERUS sp.); Broadleaf weeds; Grasses; Corn (ZEA MAYS); Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Sida, spiny (SIDA SPINOSA); Mustard, wild (BRASSICA KABER); Velvetleaf (ABUTILON THEOPHRASTI); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergent and postemergent sprays of 40 ml stock solution for non-field tests; preplanting incorporated aqueous suspensions in field tests
EXPERIMENTAL CONDITIONS: Non-field experimetns--23 cm by 23 cm by 5 cm aluminum pans, broadleaf and grass weeds not identified, crops as listed above except corn and alfalfa, applicaiton rates ranged from 0.07 to 17.92 kg/ha; criteria for passing preemergence weed control test was 50% control, criteria for passing postemergence test was 80% weed control; field tests--corn and alfalfa weeds identified, preplanting incorporated treatments, damage assessed 8 weeks later, 4.48, 2.24, 1.12, and 0.56 kg/ha rates
EFFECTS: Preemergence non-field control--50% broadleaf weed control at 4.48 kg/ha, no grass control; postemergence non-field control--80% broadleaf and grass control of 0.56 and 8.96 kg/ha, respectively; 41% crop yield in non-field tests; field tests--excellent to good weed control except for grasses and sedge at 0.56 kg/ha, no corn injury, minor alfalfa injury at all but 0.56 kg/ha
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4683>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(4-fluoro-3-methylphenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 2.24 kg/ha, no grass control; postemergence--80% broadleaf

<4683>
<4683> CONT.
and grass control at 0.56 and 4.48 kg/ha, respectively; 96% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4684>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(4-fluorophenyl)-
PLANT: Sorghum (SORGHUM VULGARE); Ryegrass, perennial (LOLIUM PERENNE); Buckwheat (FAGOPYRUM ESCULENTUM); Zinnia (ZINNIA ELEGANS); Turnip (BRASSICA RAPA); Crowfoot grass (ELEUSINE INDICA); Sedge (CYPERUS sp.); Broadleaf weeds; Grasses; Corn (ZEA MAYS); Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Sida, spiny (SIDA SPINOSA); Mustard, wild (BRASSICA KABER); Velvetleaf (ABUTILON THEOPHRASTI); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentratoins; preemergent and postemergent sprays of 40 ml stock solution for non-field tests; preplanting incorporated aqueous suspensions in field tests
EXPERIMENTAL CONDITIONS: Non-field experiments--23 cm by 23 cm by 5 cm aluminum pans, broadleaf and grass weeds not identified, crops as listed above except corn and alfalfa, application rates ranged from 0.07 to 17.92 kg/ha, criteria for passing preemergence weed control test was 50% control, criteria for passing postemergence test was 80% weed control; field tests--corn and alfalfa, weeds identified, preplanting incorporated treatments, damage assessed 8 weeks later, 4.48, 2.24, 1.12, and 0.56 kg/ha rates
EFFECTS: Preemergence non-field test--50% broadleaf weed control at 1.12 kg/ha, 50% grass control at 4.48 kg/ha; postemergence non-field tests--80% broadleaf control at 0.28 kg/ha, 80% grass control at 4.48 kg/ha; 75% crop yield in non-field tests; field tests--good weed control even at low rate (0.56 kg/ha), no corn injury, minor alfalfa injury of 4.48 kg/ha
COMMENTS: Effect on nitrite accumulation also reported; substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4685>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(4-iodophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 4.48 kg/ha, no grass control; postemergence--80% broadleaf control at 0.14 kg/ha, no grass control; 87% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4686>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(4-methoxyphenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; Postemergence--80% broadleaf and grass control at 1.12 and 17.92 kg/ha, respectively; 80% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4687>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(4-methylphenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 4.48 kg/ha, no grass control; postemergence--80% broadleaf

<4687> CONT.
and grass control at 2.24 and 8.96 kg/ha, respectively; 100% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4688>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(4-nitrophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--80% broadleaf control at 8.96 kg/ha, no grass control; 98% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4689>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-(4,5-dichloro-3-fluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80 % weed control
EFFECTS: Preemergence--50% broadleaf and grass control at 8.96 kg/ha; postemergence--80% broadleaf and grass control at 2.24 and 8.96 kg/ha, respectively; 71% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4690>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-[2-(trifluoromethyl)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24,4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g ot test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: No preemergence or postemergence weed control; 28% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4691>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-[3-(methylthio)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control of 8.96 kg/ha, no grass control; postemergence--80% broadleaf control at 1.12 kg/ha, no grass control; 80% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4692>
<4692>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-[3-(trifluoromethyl)phenyl]-
PLANT: Sorghum (SORGHUM VULGARE); Ryegrass, perennial (LOLIUM PERENNE); Buckwheat (FAGOPYRUM ESCULENTUM); Zinnia (ZINNIA ELEGANS); Turnip (BRASSICA RAPA); Crowfoot grass (ELEUSINE INDICA); Sedge (CYPERUS sp.); Broadleaf weeds; Grasses; Corn (ZEA MAYS); Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Sida, spiny (SIDA SPINOSA); Mustard, wild (BRASSICA KABER); Velvetleaf (ABUTILON THEOPHRASTI); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergent and postemergent sprays of 40 ml stock solution for non-field tests; preplanting incorporated aqueous suspensions in field tests
EXPERIMENTAL CONDITIONS: Non-field experimetns--23 cm by 23 cm by 5 cm aluminum pans, broadleaf and grass weeds not identified, crops as listed above except corn and alfalfa, applicaiton rates ranged from 0.07 to 17.92 kg/ha; criteria for passing preemergence weed control test was 50% control, criteria for passing postemergence test was 80% weed control; field tests--corn and alfalfa weeds identified, preplanting incorporated treatments, damage assessed 8 weeks later, 4.48, 2.24, 1.12, and 0.56 kg/ha rates
EFFECTS: Preemergence non-field test--50% broadleaf and grass weed control at 4.48 kg/ha; postemergence non-field test--80% broadleaf and grass control at 0.56 and 4.48 kg/ha, respectively; 85% crop yield in non-field tests; field tests--excellent weed control at all rates, no corn injury, minor alfalfa injury (most severe at 4.48 kg/ha)
COMMENTS: Effect on nitrite accumulation also reported; substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases.
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4693>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-[4-(methylthio)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 17.92 kg/ha, no grass control; postemergence--80% broadleaf control at 2.24 kg/ha, no grass control; 84% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4694>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-[4-(trifluoromethoxy)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 8.96 kg/ha, no grass control; postemergence--80% broadleaf and grass control at 2.24 and 8.96 kg/ha, respectively; 82% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4695>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-[4-(trifluoromethyl)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24,4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g ot test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 4.48 kg/ha, no grass control; postemergence--80% broadleaf and grass control at 1.12 and 8.96 kg/ha, respectively; 65% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4696>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-[4-(1-methylethyl)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--80% broadleaf and grass control at 4.48 kg/ha; 63% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4697>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-[4-(1-methylethyl)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 97% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4698>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-[4-(2-methyl-2-propanamine-N-carboxy)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 8.96 kg/ha, no grass control; postemergence--80% broadleaf control at 8.96 kg/ha, no grass control; 20% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4699>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-[4-bromo-3-(trifluoromethyl)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80 % weed control
EFFECTS: Preemergence--50% broadleaf control at 8.96 kg/ha, no grass control; postemergence--80% broadleaf control at 2.24 kg/ha, no grass control; 65% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4700>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-[4-chloro-3-(trifluoromethyl)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control

<4700>
<4700> CONT.
EFFECTS: Preemergence--50% broadleaf control at 8.96 kg/ha, no grass control; postemergence--80% broadleaf control at 1.12 kg/ha, no grass control; 63% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4701>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-[4-fluoro-3-(trifluoromethyl) phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80 % weed control
EFFECTS: Preemergence--50% broadleaf control at 8.96 kg/ha, no grass control; postemergence--80% broadleaf and grass control at 2.24 and 8.96 kg/ha, respectively; 76% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4702>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, cis-2,5-dimethyl-N-phenyl-
PLANT: Sorghum (SORGHUM VULGARE); Ryegrass, perennial (LOLIUM PERENNE); Buckwheat (FAGOPYRUM ESCULENTUM); Zinnia (ZINNIA ELEGANS); Turnip (BRASSICA RAPA); Crowfoot grass (ELEUSINE INDICA); Sedge (CYPERUS sp.); Broadleaf weeds; Grasses; Corn (ZEA MAYS); Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Sida, spiny (SIDA SPINOSA); Mustard, wild (BRASSICA KABER); Velvetleaf (ABUTILON THEOPHRASTI); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergent and postemergent sprays of 40 ml stock solution for non-field tests; preplanting incorporated aqueous suspensions in field tests
EXPERIMENTAL CONDITIONS: Non-field experiments--23 cm by 23 cm by 5 cm aluminum pans, broadleaf and grass weeds not identified, crops as listed above except corn and alfalfa, application rates ranged from 0.07 to 17.92 kg/ha, criteria for passing preemergence weed control test was 50% control, criteria for passing postemergence test was 80% weed control; field tests--corn and alfalfa, weeds identified, preplanting incorporated treatments, damage assessed 8 weeks later, 4.48, 2.24, 1.12, and 0.56 kg/ha rates
EFFECTS: Preemergence non-field test--50% broadleaf control at 1.12 kg/ha, no grass control; postemergence non-field test--80% broadleaf control at 0.28 kg/ha, 80% grass control at 1.12 kg/ha; 65% crop yield in non-field tests; field tests--good weed control even at low rate (0.56 kg/ha), no corn damage, minor alfalfa damage
COMMENTS: Effect on nitrite accumulation also reported; substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4703>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, N-(2,5-difluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 17.92 kg/ha, no grass control; postemergence--80% broadleaf and grass control at 4.48 and 17.92 kg/ha, respectively; 68% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4704>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, N-(3-chlorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; boradleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 17.92 kg/ha, no grass control; postemergence--80% broadleaf

<4704> CONT.
and grass control at 4.48 and 8.96 kg/ha, respectively; 91% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.F. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4705>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, N-(3,4-dichlorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; boradleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 17.92 kg/ha, no grass control; postemergence--80% broadleaf and grass control at 2.24 and 8.96 kg/ha, respectively; 78% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.F. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4706>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, N-(4-chlorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; boradleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 4.48 kg/ha, no grass control; postemergence--80% broadleaf and grass control at 4.48 and 17.92 kg/ha, respectively; 100% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.F. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4707>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, N-[3-(trifluoromethyl)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passin gpreemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 4.48 kg/ha, no grass control; postemergence--80% broadleaf control at 4.48 kg/ha, no grass control; 67% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.F. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4708>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, N-phenyl-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; boradleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf and grass control at 8.96 kg/ha; postemergence--80% broadleaf and grass control at 1.12 and 8.96 kg/ha, respectively; 91% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.F. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4709>
<4709>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, trans-2,5-dimethyl-N-(2-fluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilution smade to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 63% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4710>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, trans-2,5-dimethyl-N-(2,5-difluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilution smade to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 48% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4711>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, trans-2,5-dimethyl-N-(3-chlorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilution smade to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 84% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4712>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, trans-2,5-dimethyl-N-(3-fluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilution smade to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 73% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4713>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, trans-2,5-dimethyl-N-(3,4-dichlorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; boradleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control

<4713> CONT.
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 83% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4714>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, trans-2,5-dimethyl-N-(4-chlorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilution smade to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 100% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4715>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, trans-2,5-dimethyl-N-(4-fluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilution smade to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 72% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4716>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, trans-2,5-dimethyl-N-[3-(trifluoromethyl)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilution smade to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 80% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4717>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, trans-2,5-dimethyl-N-phenyl
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilution smade to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passing preemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 85% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4718>
<4718>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, 2,5-dimethyl-N-phenyl-, cis-
CHEMICAL COMMON NAME: Cisanilide
PLANT: Parsley-piert (ALCHEMILLA MICROCORPA);Henbit (LAMIUM AMPLEXICAULE);Chickweed, common (STELLARIA MEDIA);Speedwell, corn (VERONICA ARVENSIS);Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 3.4 Kg/ha
APPLICATION METHODS: Postemergence spray; 376 l./ha; surfactant--0.5%
EXPERIMENTAL CONDITIONS: Field study; 3 locations in GA; time period--1972-1974; evaluation time--42 to 85 days; bermudagrass dormant when sprayed
EFFECTS: Effective control of all weeds with one or two applications with no adverse effect on bermudagrass
COMMENTS: Herbicides controlled all weed species with single application; herbicides had less activity on parsley-piert and corn speedwell than on henbit and common chickweed; single applications of either cisanilide or methazole gave excellent parsley-piert controll; paraquat satisfactorily controlled more weed species with a single application than any other herbicide treatment
REFERENCE: Johnson, B.J., "Broadleaf Weed Control in Dormant Bermudagrass Turf," Agron. J. 67(1):689-692 (1975).

<4719>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, 2,5-dimethyl-N-phenyl-, cis-
CHEMICAL COMMON NAME: DS-5328
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Moderate control of shoot emergence at 10(-3) and 10(-4)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4720>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, 2,5-dimethyl-N-phenyl-, cis-
CHEMICAL COMMON NAME: Cisanilide
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Bluegrass, annual (POA ANNUA); Parsley-piert (ALCHEMILLA MICROCORPA); Speedwell, corn (VERONICA ARVENSIS); Clover, hop (TRIFOLIUM AGARIUM); Bermudagrass, common (CYNODON DACTYLON); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 3.4 and 4.5 kg/ha
APPLICATION METHODS: Preemergence spray; broadcast application in 376 l./ha water
EXPERIMENTAL CONDITIONS: 3-year test on golf courses, 1-year test at Georgia Experiment Station; loam, sandy clay loam, and sandy loam soils; DCPA, benefin, terbutol, bensulide used as summer chemical checks, pronamide, DCPA, and terbutol used as winter chemical checks; 1.5 by 3.0 m plots, randomized complete block design with 4 replications; summer tests--crabgrass control in turfgrass; winter tests--control of annual bluegrass, parsley-piert, corn speedwell and hop clover; visual ratings
EFFECTS: Crabgrass control at 4.5 kg/ha--7% avg. for 7 tests; annual bluegrass control--3 years, 8, 35, and 53% at 3.4 kg/ha, 18, 48, and 61% at 4.5 kg/ha; parsley-piert control--3 years, 0, 10, and 23% at 3.4 kg/ha, 0, 18, and 38% at 4.5 kg/ha; corn speedwell control--3 years, 0, 65, and 23% at 3.4 kg/ha, 0, 40, and 13% at 4.5 kg/ha; hop clover control--2 year, 100 and 95% at 3.4 kg/ha, 100 and 90% at 4.5 kg/ha; no significant effect on Kentucky bluegrass or bermudagrass
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<4721>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, 2,5-dimethyl-N-phenyl-, cis-
CHEMICAL COMMON NAME: DS-5328
PLANT: Corn (ZEA MAYS); Plants
EXPERIMENTAL DOSE: 1.0, 2.0, and 3.0 lb/A
APPLICATION METHODS: Spray; 40 gal/A at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sarpy fine sandy loam; time period--1970 and 1971
EFFECTS: Moderate control of weeds at highest rate with slight initial injury to and yield reduction of sweet corn
COMMENTS: No herbicide used significantly increased yield; cleanly cultivated plots yielded significantly more than plots treated with basamaize, propachlor, or bladex
REFERENCE: Greig, J.K. and M. Asif, "Effects of Herbicides on Yield, Weed Control, and Nutrient Content of Sweet Corn", Proc. N. Centr. Weed Contr. Conf. 26:99-101 (1971).

<4722>
CHEMICAL NAME: 1-Pyrrolidinecarboxamide, 2,5-dimethyl-N-phenyl-, cis-
CHEMICAL COMMON NAME: 5328
PLANT: Corn (ZEA MAYS); Velvetleaf (ABUTILON THEOPHRASTI); Millet, proso (PANICUM MILIACEUM); Morningglory, tall (IPOMOEA PURPUREA)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Preemergence spray; syringe sprayer (small volume); 2 ml of solution containing 5% ethanol
EXPERIMENTAL CONDITIONS: Environmental chamber; soil--steam sterilized; nested wax cup culture; temperature--22 c (day) and 13 C (night); photoperiod--12 hr; light intensity--21,500 lux
EFFECTS: Effective control of velvetleaf and proso millet but no damage to corn or morningglory
COMMENTS: Corn and morningglory escaped the herbicidal action of 5328 by metabolizing it to nontoxic compounds; velvetleaf took up more radiotracer than tall morningglory with surface application of 5328, but velvet leaf and proso millet were unable to metabolize more than 15% of parent compound
REFERENCE: Holm, R.E. and D.E. Stallard, "Metabolism of a Pyrrolidine Urea Herbicide in Corn and Weeds," Weed Sci. 22(1):10-14 (1974).

<4723>
CHEMICAL NAME: 1-Pyrrolidinethiocarboxamide, cis-2,5-dimethyl-N-(2-fluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passin gpreemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 8.96 kg/ha, no grass control; postemergence--80% broadleaf control at 8.96 kg/ha, no grass control; 68% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4724>
CHEMICAL NAME: 1-Pyrrolidinethiocarboxamide, cis-2,5-dimethyl-N-(3-fluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passin gpreemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 4.48 kg/ha, no grass control; postemergence--80% broadleaf and grass control at 4.48 kg/ha; 94% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4725>
CHEMICAL NAME: 1-Pyrrolidinethiocarboxamide, cis-2,5-dimethyl-N-[3-(trifluoromethyl)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passin gpreemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--80% broadleaf control at 0.56 kg/ha, no grass control; 80% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4726>
CHEMICAL NAME: 1-Pyrrolidinethiocarboxamide, cis-2,5-dimethyl-N-phenyl-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passin gpreemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf control at 8.96 kg/ha, no grass control; postemergence--80% broadleaf control at 1.12 kg/ha, no grass control; 60% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4727>
CHEMICAL NAME: 1-Pyrrolidinethiocarboxamide, N-phenyl-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passin gpreemergence weed control test, 50% control; criteria for passing

<4727>
<4727> CONT.
postemergence test, 80% weed control
EFFECTS: Preemergence--50% broadleaf and grass control at 8.96 kg/ha; postemergence--80% broadleaf and grass control at 8.96 kg/ha; 93% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4728>
CHEMICAL NAME: 1-Pyrrolidinethiocarboxamide, trans-2,5-dimethyl-N-(2-fluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passin gpreemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 90% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4729>
CHEMICAL NAME: 1-Pyrrolidinethiocarboxamide, trans-2,5-dimethyl-N-(3-fluorophenyl)-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passin gpreemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 98% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4730>
CHEMICAL NAME: 1-Pyrrolidinethiocarboxamide, trans-2,5-dimethyl-N-[3-(trifluoromethyl)phenyl]-
PLANT: Broadleaf weeds; Grasses; Buckwheat (FAGOPYRUM ESCULENTUM); Turnip (BRASSICA RAPA); Zinnia (ZINNIA ELEGANS); Ryegrass, perennial (LOLIUM PERENNE); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, 4.48, 8.96, and 17.92 kg/ha
APPLICATION METHODS: Test formulation--20 ml acetone solution containing 0.083 g of test compound with 20 ml water containing 0.01 g Triton X-155 surfactant, dilutions made to achieve appropriate concentrations; preemergence and postemergence sprays of 40 ml stock solution
EXPERIMENTAL CONDITIONS: Plants grown in 23 cm by 23 cm by 5 cm aluminum trays; broadleaf and grass weeds not identified; criteria for passin gpreemergence weed control test, 50% control; criteria for passing postemergence test, 80% weed control
EFFECTS: Preemergence--no weed control; postemergence--no weed control; 83% crop yield
COMMENTS: Substitution in ortho position of phenyl ring of other than hydrogen or fluorine decreased herbicidal activity in most cases
REFERENCE: Pyne, W.J., S.S. Szabo, and R.E. Holm, "Synthesis and Herbicidal Activity of Pyrrolidinecarboxanilides," J. Agric. Food Chem. 22(6):921-926 (1974).

<4731>
CHEMICAL NAME: 1-Undecanol
CHEMICAL COMMON NAME: N-undecyl alcohol
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<4732>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 2'-nitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri-dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 31-60% root and 31-60% stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, 61-90% root and 61-90% stem inhibition at 100 ppm, complete root and complete stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives With Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):345-352 (1968).

<4733>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 2',4-dinitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--11-30% root and no stem inhibition at 10 ppm, 61-90% root and 61-90% stem inhibition at 100 ppm, complete root and 91% or greater stem inhibition at 1000 ppm; rice--31-60% root and no stem inhibition at 10 ppm, complete root and 91% or greater stem inhibition at 100 ppm, complete root and complete stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives with Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 22(3):345-352 (1968).

<4734>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 2',4,6-trinitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 61-90% root and 61-90% stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, complete root and complete stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives with Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 22(3):345-352 (1968).

<4735>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 2',6-dinitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 61-90% root and 31-60% stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 11-30% root and 10% or less stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives with Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 22(3):345-352 (1968).

<4736>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 4-chloro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined

<4736>
<4736> CONT.
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 11-30% root and 11-30% stem inhibition at 100 ppm, 91% or greater root and complete stem inhibition at 1000 ppm; rice--10% or less root and no stem inhibition at 10 ppm, 31-60% root and 11-30% stem inhibition at 100 ppm, complete root and complete stem inhibition
COMMENTS: Attempted correlation of herbicidal activity with chemical structure; herbicidal activity correlated linearly with pk-value; the greater the number of chlorine atoms on the aromatic ring, the less the phytotoxic activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on the Phenylphenol Derivatives with Biological Activity, Part II. The Herbicidal Activity of Chloro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):353-358 (1968).

<4737>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 4-chloro-6-nitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri-dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no inhibition at 10 ppm, 11-30% root and 31-60% stem inhibition at 100 ppm, 31-60% root and stem inhibition at 1000 ppm; rice--no inhibition at 10 ppm, 31-60 % stem and root inhibition at 100 ppm, 61-90% root and 31-60% stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives With Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):345-352 (1968).

<4738>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 4-nitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri-dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no inhibition at 10 ppm, 61-90% root and stem inhibition at 100 ppm, complete inhibition of root and stem at 1000 ppm; rice--31-60% root and 11-30% stem inhibition at 10 ppm, 91% or greater root and 61-90% stem inhibition at 100 ppm, 91% or greater stem and root inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives With Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):345-352 (1968).

<4739>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 4-nitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri-dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 61-90% root and 61-90% stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 61-90% root and 61-90% stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives With Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):345-352 (1968).

<4740>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 4,4'-dinitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 61-90% root and 61-90% stem inhibition at 100 ppm, 91% or greater root and complete stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, 61-90% root and 31-60% stem inhibition at 100 ppm, complete root and complete stem inhibition at 1000 ppm

<4740> CONT.
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives with Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 22(3):345-352 (1968).

<4741>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 4,4',6-trinitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and 10% or less stem inhibition at 10 ppm, 61-90% stem inhibition at 100 ppm, 91% or greater root and 91% or greater stem inhibition at 1000 ppm; rice--10% or less root and no stem inhibition at 10 ppm, 11-30% root and 11-30% stem inhibition at 100 ppm, complete root and complete stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives with Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 22(3):345-352 (1968).

<4742>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 4,6-dinitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri-dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--31-60% root and 11-30% stem inhibition at 10 ppm, 91% or greater stem and root inhibition at 100 ppm, complete inhibition at 1000 ppm; rice--61-90% root and 31-60% stem inhibition at 10 ppm, 91% or greater root and 61-90% stem inhibition at 100 ppm, complete root and 61-90% stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives With Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):345-352 (1968).

<4743>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 6-chloro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 31-60% root and 31-60% stem inhibition at 100 ppm, 61-90% root and 61-90% stem inhibition at 1000 ppm; rice--no root and 11-30% stem inhibition at 10 ppm, 31-60% root and 31-60% stem inhibition at 100 ppm, complete inhibition of root and stem at 1000 ppm
COMMENTS: Attempted correlation of herbicidal activity with chemical structure; herbicidal activity correlated linearly with pk-value; the greater the number of chlorine atoms on the aromatic ring, the less the phytotoxic activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on the Phenylphenol Derivatives with Biological Activity, Part II. The Herbicidal Activity of Chloro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):353-358 (1968).

<4744>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 6-chloro-4-nitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri-dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--31-60% root and no stem inhibition at 10 ppm, 91% or greater root and 61-90% stem inhibition at 100 ppm, complete inhibition at 1000 ppm; rice--no inhibition at 10 ppm, 91% or greater root and 61-90% stem inhibition at 100 ppm, complete inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives With Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):345-352 (1968).

<4745>
<4745>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 6-nitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri-dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no inhibition of 10 or 100 ppm, 10% or lower root and 11-30% stem growth inhibition at 1000 ppm; rice--no inhibition at 10 ppm, 11-30% root and 10% or less stem inhibition at 100 ppm, 31-60% root and 11-30% stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives With Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):345-352 (1968).

<4746>
CHEMICAL NAME: 1,1'-Biphenyl-2-ol, 6-nitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 61-90% root and 31-60% stem inhibition at 100 ppm, 91% or greater root and 61-90% stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 11-30% root and 10% or less stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives with Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 22(3):345-352 (1968).

<4747>
CHEMICAL NAME: 1,1'-Biphenyl-2'-ol, 4,6-dichloro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 11-30% root and 11-30% stem inhibition at 100 ppm, 61-90% root and 61-90% stem inhibition at 1000 ppm; rice--no root and 10% or less stem inhibition at 10 ppm, 61-90% root and 11-30% stem inhibition at 100 ppm, 91% or greater root and 91% or greater stem inhibition at 1000 ppm
COMMENTS: Attempted correlation of herbicidal activity with chemical structure; herbicidal activity correlated linearly with pk-value; the greater the number of chlorine atoms on the aromatic ring, the less the phytotoxic activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on the Phenylphenol Derivatives with Biological Activity, Part II. The Herbicidal Activity of Chloro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):353-358 (1968).

<4748>
CHEMICAL NAME: 1,1'-Biphenyl-4-ol, 2-chloro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--11-30% root and no stem inhibition at 10 ppm, 11-30% root and 11-30% stem inhibition at 100 ppm, 61-90% root and 61-90% stem inhibition at 1000 ppm; rice--61-90% root and no stem inhibition at 10 ppm, 61-90% root and 31-60% stem inhibition at 100 ppm, complete root and complete stem inhibition at 1000 ppm
COMMENTS: Attempted correlation of herbicidal activity with chemical structure; herbicidal activity correlated linearly with pk-value; the greater the number of chlorine atoms on the aromatic ring, the less the phytotoxic activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on the Phenylphenol Derivatives with Biological Activity, Part II. The Herbicidal Activity of Chloro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):353-358 (1968).

<4749>
CHEMICAL NAME: 1,1'-Biphenyl-4-ol, 2-chloro-6-nitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri-dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--10% or less root and 11-30% stem inhibition at 10 ppm, 31-60% root and 61-90% stem inhibition at 100 ppm, 61-90% stem and root inhibition at 1000 ppm; rice--no inhibition at 10 ppm, 31-60% stem and root inhibition at 100 ppm, 91% or greater root and 61-90% stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives With Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):345-352 (1968).

<4750>
CHEMICAL NAME: 1,1'-Biphenyl-4-ol, 2-nitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri-dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no stem and root inhibition at 10 and 100 ppm, 10% or less stem and root inhibition at 1000 ppm; rice--10% or less root and no stem inhibition at 10 ppm, 91% or greater root and 10% or less stem inhibition at 100 ppm, 91% or greater root and 11-30% stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives With Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):345-352 (1968).

<4751>
CHEMICAL NAME: 1,1'-Biphenyl-4-ol, 2,2'-dinitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 31-60% root and 31-60% stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, no root and no stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives with Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 22(3):345-352 (1968).

<4752>
CHEMICAL NAME: 1,1'-Biphenyl-4-ol, 2,2',6-trinitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 11-30% root and no stem inhibition at 100 ppm, 31-60% root and 31-60% stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 10% or less root and no stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives with Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 22(3):345-352 (1968).

<4753>
CHEMICAL NAME: 1,1'-Biphenyl-4-ol, 2,4'-dinitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 11-30% root and 11-30% stem inhibition at 100 ppm,

<4753>
<4753> CONT.
31-60% root and 11-30% stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, 31-60% root and 11-30% stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives with Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 22(3):345-352 (1968).

<4754>
CHEMICAL NAME: 1,1'-Biphenyl-4-ol, 2,4',6-trinitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 31-60% root and no stem inhibition at 100 ppm, 61-90% root and 61-90% stem inhibition at 1000 ppm; rice--no root and no stem inhibition at 10 ppm, no root and no stem inhibition at 100 ppm, complete root and 91% or greater stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives with Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 22(3):345-352 (1968).

<4755>
CHEMICAL NAME: 1,1'-Biphenyl-4-ol, 2,6-dichloro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--10% or less root and no stem inhibition at 10 ppm, 11-30% root and 11-30% stem inhibition at 100 ppm, 31-60% root and 61-90% stem inhibition at 1000 ppm; rice--61-90% root and no stem inhibition at 10 ppm, 61-90% root and no stem inhibition at 100 ppm, complete root and no stem inhibition at 1000 ppm
COMMENTS: Attempted correlation of herbicidal activity with chemical structure; herbicidal activity correlated linearly with pk-value; the greater the number of chlorine atoms on the aromatic ring, the less the phytotoxic activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on the Phenylphenol Derivatives with Biological Activity, Part II. The Herbicidal Activity of Chloro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):353-358 (1968).

<4756>
CHEMICAL NAME: 1,1'-Biphenyl-4-ol, 2,6-dinitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri-dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--11-30% root and stem inhibition at 10 ppm, 61-90% and 31-60% stem inhibition at 100 ppm, 91% or greater stem and root inhibition at 1000 ppm; rice--11-30% root and 10% or less stem inhibition at 10 ppm, 61-90% root and 31-60% inhibition at 100 ppm, complete root and 61-90% stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives With Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):345-352 (1968).

<4757>
CHEMICAL NAME: 1,1'-Biphenyl-4-ol, 2'-nitro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri-dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 11-30% root and 11-30% stem inhibition at 100 ppm, 91% or greater root and 91% or greater stem inhibition at 1000 ppm; rice--no root and no stem inhbition at 10 ppm, 11-30% root and no stem inhibition at 100 ppm, complete root and complete stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives With Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):345-352 (1968).

<4758>
CHEMICAL NAME: 1,1'-Biphenyl-4-ol, 4'-chloro-2,6-dichloro-
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in petri dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 11-30% root and 11-30% stem inhibition at 100 ppm, 31-60% root and 31-60% stem inhibition at 1000 ppm; rice--61-90% root and no stem inhibition at 10 ppm, 61-90% root and 10% or less stem inhibition at 100 ppm, 61-90% root and 11-30% stem inhibition at 1000 ppm
COMMENTS: Attempted correlation of herbicidal activity with chemical structure; herbicidal activity correlated linearly with pk-value; the greater the number of chlorine atoms on the aromatic ring, the less the phytotoxic activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on the Phenylphenol Derivatives with Biological Activity, Part II. The Herbicidal Activity of Chloro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):353-358 (1968).

<4759>
CHEMICAL NAME: 1,1'-Biphenyl-4-ol, 4'-nitro
PLANT: Radish (RAPHANUS SATIVUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 10, 100, and 1000 ppm
APPLICATION METHODS: Grown in Petri-dish test solution, 1 ml test concentration plus 5 ml distilled water
EXPERIMENTAL CONDITIONS: Concentrations prepared and 1 ml of each plus 4 ml distilled water added to respective Petri dishes; 14 radish or rice seeds germinated in each dish at 29 C in dark chamber; primary root and bud lengths measured after 4 days for radish and 6 days for rice; inhibition of germination and seedling growth determined
EFFECTS: Radish--no root and no stem inhibition at 10 ppm, 11-30% root and 10% or less stem inhibition at 100 ppm, 61-90% root and no stem inhibition at 1000 ppm; rice--no root and no stem in inhibition at 10 ppm, 10% or less root and no stem inhibition at 100 ppm, 31-60% root and 11-30% stem inhibition at 1000 ppm
COMMENTS: Substitution of nitro group increases herbicidal activity of phenylphenol; pk value correlated with herbicidal activity
REFERENCE: Cheng, H.-M., M. Eto, S. Kuwatsuka, and Y. Oshima, "Studies on Phenylphenol Derivatives With Biological Activity Part I. Herbicidal Activity of Nitro-Substituted Phenylphenols," Agric. Biol. Chem. 32(3):345-352 (1968).

<4760>
CHEMICAL NAME: 1,2-Benzenedimethanol, 3-methoxy-4-methyl-5-[(3-methyl-2-butenyl)oxy]-
CHEMICAL COMMON NAME: Zinniol
PLANT: Zinnia (ZINNIA ELEGANS); Sunflower (HELIANTHUS ANNUUS); Lettuce (LACTUCA SATIVA); Watermelon (CITRULLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Carrot (DAUCUS CAROTA); Spinach (SPINACIA OLERACEA); Squash, summer (CUCURBITA PEPO); Beet, sugar (BETA VULGARIS); Oat (AVENA SATIVA); Corn (ZEA MAYS); Pea, sweet (PISUM SATIVUM); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 250, 500, and 1000 ppm
APPLICATION METHODS: Seeds and seedlings placed in test solutions
EXPERIMENTAL CONDITIONS: Zinniol dissolved in ethanol and added to water to achieve desired concentrations; cut seedlings of all but carrot and lettuce placed in test solutions for maximum of 44 hr; zinnia, lettuce, tomato, watermelon, and carrot seeds exposed to 500 ppm
EFFECTS: No effect below 250 ppm; browning and chlorosis in some plants, total withering of all plants except sunflower which showed marked withering at 1000 ppm; sunflower less sensitive, showed little response to concentrations below 500 ppm; seed germination of plants strongly inhibited at 500 ppm
COMMENTS: Fungus metabolite
REFERENCE: White, G.A. and A.N. Starratt, "The Production of a Phytotoxic Substance by ALTERNARIA ZINNIAE," Can. J. Bot. 45(10):2087-2090 (1967).

<4761>
CHEMICAL NAME: 1,2-Benzenediol, 4-[1-hydroxy-2(methylamino)ethyl]-, (R)-
CHEMICAL COMMON NAME: Adrenaline
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<4762>
CHEMICAL NAME: 1,2,3-Propanetricarboxylic acid, 2-hydroxy-
CHEMICAL COMMON NAME: Citric acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<4763>
<4763>
CHEMICAL NAME: 1,2,3-Propanetricarboxylic acid, 2-hydroxy-
CHEMICAL COMMON NAME: Citric acid
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 3X10(-3)M
APPLICATION METHODS: Submersion of oat coleoptiles
EXPERIMENTAL CONDITIONS: Laboratory study; oat coleoptile assay--increased or inhibited growth of 3 mm sections in solutions containing sucrose, IAA, and experimental compounds; coleoptile age--66-69 hr (and at other times)
EFFECTS: Growth stimulation
COMMENTS: Most organic acids accelerated growth in absence of inhibitor but in presence of auxin and sucrose or auxin alone; inhibition of growth by low concentrations of iodoacetate, and reversal of inhibition by certain oragnic acids; sensitivity of sections both to inhibitor and to growth promoting effect of the acids varied with age of the plants; lowest concentration causing definite inhibition steadily decreased with increasing age
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. I. The Action of Iodoacetate and Organic Acids on the AVENA Coleoptile," Am. J. Bot. 35:271-281 (1948).

<4764>
CHEMICAL NAME: 1,2,3-Triazolo[4,5-d]pyrimidin-]-one, 5-amino-1,4-dihydro-7H-
CHEMICAL COMMON NAME: 8-Azaguanine
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1x10(-3) to 5x10(-3)M
APPLICATION METHODS: Immersion in assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated bean seedling leaves; evaluation time--12 to 14 hr
EFFECTS: Inhibited protein synthesis and chloroplast formation
COMMENTS: Inhibitors affected RNA synthesis blocked 2nd stage and arrested proplastid conversion to chloroplasts; plastid division also seemed to stop; inhibition of DNA synthesis blocked 1st stage; proplastids, escaping the stage of division, directly converted to chloroplasts which were, similarly to those formed in the first case, incapable of division
REFERENCE: Beridze, T.G., M.S. Odintsova, N.A. Cherkashina, and M.M. Sissakian, "The Effect of Nucleic Acid Synthesis Inhibitors on the Chlorophyll Formation by Etiolated Bean Leaves," Biochem. Biophys. Res. Comm. 23(5):683-690 (1966).

<4765>
CHEMICAL NAME: 1,2,3-Triazolo[4,5-d]pyrimidin-7-one, 5-amino-1,4-dihydro-7H-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 0.001M
APPLICATION METHODS: Injection of 300ml fluid of test solution
EXPERIMENTAL CONDITIONS: Two 3-year old peach trees; injection holes drilled 30cm above soil line; trees injected while dormant, at bud swell stage, and at full leaf stage
EFFECTS: Mild leaf burn with rapid recovery
COMMENTS: 0.001M concentration dissolved in 0.1M dimethyl sulfoxide did not increase injury; effect on peach mosaic virus (strain PM-4) and necrotic ringspot virus also investigated
REFERENCE: Pine, T.S., "Reactions of Peach Trees and Peach Tree Viruses to Treatment with Dimethyl Sulfoxide and Other Chemicals," Phytopathology 57: 671-673 (1967).

<4766>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Parsley-piert (ALCHEMILLA MICROCORPA);Henbit (LAMIUM AMPLEXICAULE);Chickweed, common (STELLARIA MEDIA);Speedwell, corn (VERONICA ARVENSIS);Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 2.2 and 4.4 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l./ha; surfactant--0.5%
EXPERIMENTAL CONDITIONS: Field study; 3 locations in GA; time period--1972-1974; evaluation time--42 to 85 days; bermudagrass dormant when sprayed
EFFECTS: Effective control of parsley-piert, henbit, and chickweed in single application at 2.2 kg/ha and of corn speedwell but 2 applications at 4.4 kg/ha required; no effect on greening of bermudagrass
COMMENTS: Herbicides controlled all weed species with single application; most herbicides had less activity on parsley-piert and corn speedwell than on henbit and common chickweed; single applications of either cisanilide or methazole gave excellent parsley-piert controll; paraquat satisfactorily controlled more weed species with a single application than any other herbicide treatment
REFERENCE: Johnson, B.J., "Broadleaf Weed Control in Dormant Bermudagrass Turf," Agron. J. 67(1):689-692 (1975).

<4767>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Panicum, fall (PANICUM DICHOTOMIFLORUM); Grasses; Broadleaf weeds; Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 0.75, 1.0, 1.5, 2.0, 3.0, and 4.0 lb/A
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Field study; soil--fine sandy loam; time period--1975 and 1976
EFFECTS: At 2.0 lb/A, effective control of all weeds and reduced alfalfa yield at higher rates
COMMENTS: Dinoseb, metolachlor, and methazole significantly thinned out alfalfa seedings; benefin, EPTC, profluralin, and butralin were outstanding treatments in grassy weed control; Vel 5052 did good job in controlling fall panicum and other grassy weeds but poor in broadleaf weed control
REFERENCE: Vengris, J. "Annual Weed Control in Alfalfa New Seedlings," Proc. Northeast. Weed Sci. Soc. 31:99-103 (1977).

<4768>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Quackgrass (AGROPYRON REPENS); Nutsedge, yellow (CYPERUS ESCULENTUS); Lamb's-quarters (CHENOPODIUM ALBUM); Yew, upright (TAXUS CUSPIDATA); Chickweed, common (STELLARIA MEDIA); Horseweed (ERIGERON CANADENSIS); Vetch, bird (VICIA CRACCA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Carpetweed (MOLLUGO VERTICILLATA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Formulation -- 75% WP; sprays applied with hand-held boom to deliver 50 gal/A
EXPERIMENTAL CONDITIONS: Yews (5 years old) spaced at 2 foot intervals in rows 3 feet apart; herbicides applied on December 1, 1970 and again on December 9, 1971; soil was moist and 39 degree F at 3 inch depth at 1970 treatment, air temperature was 45 degrees F; December 1971 application -- 1 to 3 inches snow on ground and air temperature 39 degrees F
EFFECTS: No control of quackgrass or nutsedge; some extended control of annual weeds; second growing season, annual weed control improved at 4 lb/A application
COMMENTS: Excessive rainfall second growing season accelerated herbicide leaching; results of weed control with combinations of herbicides reported
REFERENCE: Ahrens, J.F., "Fall Applications of Herbicides for Control of Quackgrass and Yellow Nutsedge in TAXUS CUSPIDATA CAPITATA," Proc. Northeast. Weed Sci. Soc. 28:379-385(1974).

<4769>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Sida, spiny (SIDA SPINOSA)
EXPERIMENTAL DOSE: 0.28, 0.56, 0.84, 1.12, 1.68, 2.24, 3.36, 4.48 and 8.96 kg/ha
APPLICATION METHODS: Formulation -- 75% WP; preemergence and over-the-top postemergence spray applied in water at 320 l./ha at 1406 g/cm2 pressure; directed postemergence sprays at 320 l./ha at 2460 g/cm2 using two flat fan spray tips
EXPERIMENTAL CONDITIONS: 1250 ml soil mixture -- 45% Landisburg-Greendale silt loam soil, 45% sand, 10% peat; 8 cotton seeds placed in pots and covered with 250 ml soil mixture that contained prickly sida seeds; greenhouse experiments; sprinkler irrigation
EFFECTS: Emergence of cotton and prickly sida not affected; premergence application -- toxicity to prickly sicla increased as concentration increased, 2.24 kg/ha and above toxic to cotton; postemergence application -- toxic to prickly sida at all concentrations whether applied directly or over-the-top (most harmful), directed application not toxic to cotton but over-the-top was harmful; plant injury increased as concentration increased
COMMENTS: 1.86 kg/ha most practical dose for prickly sida preemergence control; methazole not recommended as postemergence herbicide for over-the-top spray application control of prickly sida
REFERENCE: Butts, E.R. and C.L. Foy, Phytotoxicity of Methazole to Prickly Sida and Cotton," Weed Sci. 22(5):409-414(1974).

<4770>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Plants
EXPERIMENTAL DOSE: 1.0, 2.0, 4.0, and 8.0 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays
EXPERIMENTAL CONDITIONS: Field studies; time period--1967 to 1969; soils--Ramona sandy loam and Greenfield
EFFECTS: In preemergence application, slight injury to asparagus; in postemergence application, effective weed control at 3 highest rates
COMMENTS: Chemicals which killed or severely damaged asparagus include monuron, diuron, simazine, sinbar, sindone-B, treflan, tenoran, and CIPC; vegiben marginal; of herbicides tested in these trials for pre-emergence weed control in direct-seeded asparagus, balan, bensulide, and brominal offer most promising results
REFERENCE: Whiting, F.L., F.H. Takatori, and J.M. Lyons, "Weed Control in Asparagus," Calif. Agric. 25(1):4-5 (1971).

<4771>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Onion (ALLIUM CEPA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Postemergence 48 days after treatment
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared April 16 of the following year; seeding 1 day after seedbed preparation; single row plots 3 by 28 ft; herbicides applied in 2 ft band over row; irrigation as needed; weed ratings, 123 days after seeding; onion harvest, more than 5 months after seeding--34 bulbs from untreated control
EFFECTS: Poor pigweed and foxtail control, good lambsquarter control; 71 bulbs at 1 lb/A and 107 bulbs at 2 lb/A harvested
COMMENTS: Methazole in combination with other herbicides also tested
REFERENCE: Noll, C.J., "Evaluation of Herbicides for Weed Control in Seeded Onions Grown in Mineral Soils," Proc. Northeast. Weed Sci. Soc. 28:221-223 (1974).

<4772>
<4772>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Spurge, spotted (EUPHORBIA MACULATA); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence spray; June application
EXPERIMENTAL CONDITIONS: Golf course green; randomized complete block designs with 4 replications; turf appearance, turf density, and weed control assessed; untreated check as control
EFFECTS: Turf appearance--55, 91, and 100% of check at 7, 18, and 27 days after treatment; turf density not affected; 81% weed control 27 days after treatment
COMMENTS: Temporary bermudagrass injury; herbicide combinations also tested
REFERENCE: Johnson, B.J., "Spotted-Spurge Control in Bermudagrass Golf Greens with Herbicides: A Preliminary Report," Ga. Agric. Res. 18(2):24-25 (1976).

<4773>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Bluegrass, annual (POA ANNUA); Parsley-piert (ALCHEMILLA MICROCORPA); Speedwell, corn (VERONICA ARVENSIS); Clover, hop (TRIFOLIUM AGARIUM); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Preemergence spray; broadcast application in 376 l./ha water
EXPERIMENTAL CONDITIONS: 2-year test on golf course; Cecil loam and Cecil sandy loam; bermudagrass turf; winter experiments; terbutol, DCPA, and pronamide as chemical checks; visual ratings
EFFECTS: Bluegrass control--2 years, 48 and 55%; parsley-piert control--2 years, 28 and 50%; corn speedwell--no control; hop clover control--2 years, 88 and 93%; bermudagrass--no significant effect
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<4774>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 3.36 kg/ha
APPLICATION METHODS: Preemergence treatment in spray volume of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: 50% weed control 25 days after treatment
COMMENTS: Hophornbeam copperleaf--southwestern weed prevalent in peanuts
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<4775>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: VCS-438
PLANT: Potato (SOLANUM TUBEROSUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: 75% WP preemergence spray at 20 psi pressure and 38 gal/A volume
EXPERIMENTAL CONDITIONS: April planting; plots--2 rows wide by 30 ft long; randomized complete block design; treatments replicated five times in experiments 1 and 3 and four times in others; total of 5 experiments; rye seeded following potato harvest
EFFECTS: Experiment 3--no phytotoxic effect on potato or rye crops, commercially unacceptable weed control
COMMENTS: Author notes that growing conditions (cool spring and high June rainfall) caused vigorous weed growth and retarded potato growth, thus reason for commercially unacceptable weed control; herbicide combinations also discussed
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<4776>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Broadleaf weeds; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/A
APPLICATION METHODS: Preplant and preemergence sprays; 80 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Invaried applications, gnerally effected control of broadleafs with moderate control of grasses and no adverse effect on pototo yield
COMMENTS: Most herbicides somewhat ineffective for annual grass control; S-6044, MSB20035, and oxadiazolin all ineffective for control of annual grasses; combinations of oryzalin with metribuzin, methazole, and linuron also provided good broadleaved weed and quackgrass control; oryzalin alone not effective for annual grass or quackgrass control
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in White Potatoes in Maine - 1973," Proc. Northeast. Weed Sci. Soc. 28:287-295 (1974).

<4777>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Millet, Japanese (ECHINOCHLOA CRUSGALLI); Sorghum, grain (SORGHUM BICOLOR); Nutsedge, yellow (CYPERUS ESCULENTUS); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 2.24 and 4.48 kg/ha
APPLICATION METHODS: Preplant spray; 37 dkl./ha; soil incorporated (10 cm depth)
EXPERIMENTAL CONDITIONS: Field study; soil--Hespera sandy loam and Hespera loamy sand; evaluation time--2 and 5 wk and harvest; sorghum and millet used as bioassay plants in persistence evaluation
EFFECTS: Moderate control of nutsedge and severe damage to millet and sorghum with slight yield reduction of seed cotton at higher rate
COMMENTS: All herbicides controlled nutsedge for at least 1 month in two or more experiments; cotton most tolerant to applications of CP-53619, of prometryne, of San-6706, and of methazole; higher rates of San-6706 and methazole and all rates of alachlor, P-7465, and R-12001 reduced yield of cotton in one or more experiments
REFERENCE: Keeley, P.E., J.H. Miller, and C.H. Carter, "Weed and Cotton Response to Several Herbicides," Weed Sci. 21(4):327-329 (1973).

<4778>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 2.2 and 4.4 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l/ha; one or two applications
EXPERIMENTAL CONDITIONS: Field study; four locations in Georgia over three year period (1972 to 1974)
EFFECTS: Effective control of weeds at 2.2 kg/ha (single application); no permanent damage to Bermudagrass
COMMENTS: Large crabgrass controlled satisfactorily at Griffin in 1972 and 1973 with single application of MSMA, however, repeated applications required for similar control at Griffin in 1974 and at Blairsville in 1973 and 1974
REFERENCE: Johnson, B.J., "Postemergence Control of Large Crabgrass and Goosegrass in Turf," Weed Sci. 25(3):404-409 (1975).

<4779>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Clover, white (TRIFOLIUM REPENS)
EXPERIMENTAL DOSE: 1.5 to 6.0 lb/A; 75% WP
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study; time period--1974 and 1975
EFFECTS: Moderate control of clover at 3.0 lb/A and above with moderate damage to bluegrass
COMMENTS: Combination treatments were more effective than single herbicides alone; Vel 4207 showed considerable activity at low rates on white clover with limited effectiveness on plantain; methazole injurious to turf
REFERENCE: Hall, J.R., "Control of Broadleaf Weeds in Cool-Season Turf," Proc. N.E. Weed Sci. Soc. 30:377-384 (1976).

<4780>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Onion (ALLIUM CEPA); Leek (ALLIUM PORRUM); Plants
EXPERIMENTAL DOSE: 1.0, 1.87, and 2.0 lb/A; 75% WP
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil-sandy loam
EFFECTS: At 2-3 leaf stage and 2.0 lb rate, effective weed control with no adverse effect on onion or leek
COMMENTS: Bulb onions and leeks severely injured at early growth stages, but application at 2-leaf stage had no significant adverse effect; at this stage, salad onions for over-wintering injured, but slightly later application caused only transient injury; control of most weed species very good
REFERENCE: Roberts, H.A. and W. Bond, "Experiments With Methazole on Onions and Leeks," Proc. 11th. Br. Weed Cont. Conf. 1:185-189 (1972).

<4781>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 2-(3,4-dichlorophenyl)-4-methyl-
CHEMICAL COMMON NAME: Methazole
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Bermudagrass, common (CYNODON DACTYLON); Centipede grass (EREMOCHLOA OPHIUROIDES); St. Augustine's grass (STENOTHAPHRUM SECUNDUN); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 0.6, 1.1, 2.2, and 4.4 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l./ha; one or two applications
EXPERIMENTAL CONDITIONS: Field study; four locations in Georgia
EFFECTS: Two applications at 1.1 kg/ha rate (or more) required for effective control of both weeds; this caused slight to moderate damage of turf grasses (except bluegrass), but damage was temporary; bluegrass was severely damaged by methazole
COMMENTS: Metribuzim and methazole as single treatments controlled 82 and 87% goosegrass, respectively; repeated treatments needed for similar control of large crabgrass; these treatments did not permanently injure bermudagrass or centipedegrass
REFERENCE: Johnson, B.J., "Turfgrass Tolerance and Weed Control with Methazole and Metribuzin," Weed Sci. 24(5):512-519 (1976).

<4782>
<4782>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 4-(1-methylethyl)-2-phenyl-
CHEMICAL COMMON NAME: VCS-438
PLANT: Nutsedge (CYPERUS sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Pigweed (AMARANTHUS sp.); Pigweed, spiny (AMARANTHUS SPINOSUS); Jimsomweed (DATURA STRAMONIUM); Purslane, common (PORTULACA OLERACEA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 75% WP Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Moderate to effective control of all weeds except nutsedge (no control) with good corn tolerance
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<4783>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 4-(1-methylethyl)-2-phenyl-
CHEMICAL COMMON NAME: VCS-438
PLANT: Pigweed (AMARANTHUS sp.)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Postemergence spray; 40 gal/A at 25 psi; 75% WP Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of pigweed
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<4784>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 4-(1-methylethyl)-2-phenyl-
CHEMICAL COMMON NAME: VCS-438
PLANT: Plants; Potato (SOLANUM TUBEROSUM); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 1.5 lb/A; 75% WP
APPLICATION METHODS: Postemergence, preemergence, and preplant incorporated sprays; 38 gal/A; 20 psi; granular materials applied with cone-type applicator; varied combined treatments evaluated
EXPERIMENTAL CONDITIONS: Field study; three locations; rye cover crop after harvest
EFFECTS: Slight to moderate control of weeds in preemergence application with no adverse effect on crop plants
COMMENTS: Most treatments did not result in commercially acceptable control levels because of a number of conditions which reduced effectiveness of weed control in 1972
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<4785>
CHEMICAL NAME: 1,2,4-Oxadiazolidine-3,5-dione, 4-(1-methylethyl)-2-phenyl-
CHEMICAL COMMON NAME: VCS-438
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Cotton (GOSSYPIUM HIRSUTUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.12, 2.24, and 4.48 kg/ha
APPLICATION METHODS: Soil surface spray (preplant) with incorporation; 56 dkl/ha; depth--6.35 cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Hesperia fine sandy loam; temperature--27 to 31 C; nutsedge tubers and cotton seed planted; plastic container culture; evaluation time--up to 8 wk
EFFECTS: Poor control of purple nutsedge at all application rates; moderate control of yellow nutsedge; little effect (but variable) on cotton
COMMENTS: All treatments except lowest rate of alachlor and VCS-438 controlled yellow nutsedge for 8 weeks; these and other compounds less effective against purple nutsedge; all herbicides moderately to severely damaged cotton except CP-53619 and R-7465
REFERENCE: Keeley, P.E., C.H. Carter, and J.H. Miller, "Evaluation of the Relative Toxicity of Herbicides to Cotton and Nutsedge," Weed Sci. 20(1):71-74 (1972).

<4786>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amine-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Bay 94337
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Incorporated aplications in 28 gpa solution
EXPERIMENTAL CONDITIONS: Fall and spring application; 5 to 6 inch incorporation; plots--4 x 20 ft with 3 replications; monthly nutsedge counts; field studies
EFFECTS: Fall--1 lb/A gave effective control at 1 and 3 months after application, 2 lb/A did not give significant control at any month; spring--2 lb/A provided effective control even 7 months after application
COMMENTS: Inconsistent results in fall experiments
REFERENCE: Locascio, S.J. and W.L. Currey, "Yellow Nutsedge (CYPERUS ESCULENTUS) control and Vegetable Crop Tolerance with Various Herbicides," Proc. South. Weed Sci. Soc. 26:259-266 (1973).

<4787>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amine-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Bay 94337
PLANT: Broadleaf weeds; Grasses; Bean, pinto (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Preplant spray (incorporated, 3.5 in. depth) and preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--Tripp sandy loam and Bridgeport loam; two locations in Nebraska;
EFFECTS: Effective control of weeds with moderate initial injury and reduced yield of field beans

<4787> CONT.
COMMENTS: Weed control and field bean yields higher when EPTC, trifluralin, and alachlor incorporated than when applied 4 days after planting and rotary hoed; best results with alachlor resulted when applied preemergence; best control of black night-shade was with EPTC and alachlor or these herbicides in combinations with other herbicides
REFERENCE: Fenster, C.R. and G.A. Wicks, "Weed Control in Field Beans in Nebraska," Proc. N. Centr. Weed Contr. Conf. 26:50-52 (1971).

<4788>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-3-methyl-6-phenyl-
CHEMICAL COMMON NAME: Metamitron
PLANT: Pimpernel, common (ANAGALLIS ARVENSIS); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM); Marigold, corn (CHRYSANTHEMUM SEGETUM); Fumitory (FUMARIA OFFICINALIS); Henbit (LAMIUM AMPLEXICAULE); Bluegrass, annual (POA ANNUA); Popolo (SOLANUM NIGRUM); Buckwheat, wild (POLYGONUM CONVOLVULUS); Ladysthumb (POLYGONUM PERSICARIA); Groundsel, common (SENECIO VULGARIS); Chickweed, common (STELLARIA MEDIA); Speedwell, ivy-leaf (TRIPLEUROSPERMUM MARITUMUM); Nettle, dog (URTICA URENS); Speedwell, ivy-leaf (VERONICA HEDERIFOLIA); Bird's-eye (VERONICA PERSICA); Pansy, wild (VIOLA ARVENSIS); Blackgrass (ALOPECURUS MYOSUROIDES); Goosefoot (ATRIPLEX PATULA); Carrot, wild (DAUCUS CAROTA); Wortweed (EUPHORBIA HELIOSCOPIA); Cleavers (GALIUM APARINE); Pineappleweed (MATRICARIA MATRICARIOIDES); Poppy, field or corn (PAPAVER RHOEAS); Smartweed, pale (POLYGONUM LAPATHIFOLIUM); Buttercup (RANUNCULUS sp.); Dock (RUMEX sp.); Catchfly (SILENE sp.); Crunchweed (SINAPIS ARVENSIS); Nightshade (SOLANUM sp.); Pennycress, field (THLASPI ARVENSE); Clover (TRIFOLIUM sp.); Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 2.8 to 7.0 kg/ha; 70% WP
APPLICATION METHODS: Preemergence and early-postemergence sprays; 300 l./ha at two bars pressure
EXPERIMENTAL CONDITIONS: Field study; time period--1974 to 1976
EFFECTS: Moderate to effective control of all weeds except ALOPECURUS MYOSUROIDES, POLYGONUM CONVOLVULUS, and GALIUM APARINE with no adverse effect on sugar beet; combined preemergence and postemergence applications much more effective than preemergence alone
COMMENTS: Metamitron very safe to sugar beet at all growth stages; single applications gave effective weed control when applied pre-emergence or early post-emergence; soil and climatic conditions influenced activity less than comparable residual herbicides but usually further weed control measures required
REFERENCE: Morris, D.B., P.A. Birch, and P.W. Rose, "The Development of Metamitron, a Highly Selective and Versatile Herbicide, for Use on Sugar Beet in the U.K.," Proc. 1976 Br. Crop Protection Conf. 1:189-196 (1976).

<4789>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Tomato (LYCOPERSICON ESCULENTUM); Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Stinkgrass (ERAGROSTIS CILIANENSIS)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Preplanting and preemergence applications; 34 gal/A; rototilling 3in. deep for preplanting application ; WP formulation
EXPERIMENTAL CONDITIONS: Field study; soil--Norfolk loamy sand; evaluation time--one and three months; seven types of application schedules employed selectively
EFFECTS: Except on grasses on which poor to moderate control obtained 3 mo effect of both applications about the same i.e. good control of lambsquarters with little effect on tomato vigor or yield
COMMENTS: Combined with trifluralin in preplanting and early postemergence application resulted in very effective control of all weed species and little effect on tomato
REFERENCE: Beste, C.E., "Weed Control in Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 28:265-269 (1974).

<4790>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 0.25 and 5.0 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: In preemergence application, metribuzin gave complete control of weeds but unspecified toxicity to crop beans; similar results obtained in combination with EL-119
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<4791>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Potato (SOLANUM TUBEROSUM) ; Wheat (TRITICUM AESTIVUM) ; Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 0.2 to 10 ppm
APPLICATION METHODS: Addition of solutions to vermiculite containing young potato plants or to grain seed
EXPERIMENTAL CONDITIONS: Greenhouse and environmental chamber studies; temperature--18 to 22 C; 70-75% RH; varied light conditions
EFFECTS: At 1.0 to 3.0 ppm, reduced potato growth with varied biochemical alterations of all plants
COMMENTS: Changes observed in response to herbicidal treatment largely consequence of temporary lowered

<4791>
<4791> CONT.
concentration of reducing sugars caused by partial inhibition of photosynthesis; herbicidal treatment led to strongly enhanced nitrate reductase activity accompained by higher levels of nitrate, soluble amino acids and soluble protein
REFERENCE: Fedtke, C., "Influence of Photosynthesis-Inhibiting Herbicides on the Regulation of Crop Plant Metabolism," Pest. Biochem. & Physiol. 2:312-323 (1971).

<4792>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Broadleaf weeds; Grasses; Nutsedge, yellow (CYPERUS ESCULENTUS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Preemergence spray; 38 gal/A at 20 psi; 50% WP Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of broadleaf weeds and moderate control of grasses and nutsedge with no adverse effect on potato yield
COMMENTS: Incorporated type treatments effective in giving season-long annual grass control, but pre-emergence treatments were not; EPTC only effective material on heavy stand of nutsedge
REFERENCE: Sanok, W.J., "Evaluation of Herbicides for Control of Weeds in Long Island Potatoes-1973," Proc. Northeast. Weed Sci. Soc. 28:282-286 (1974).

<4793>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Preemergence spray; 38 gal/A at 20 psi; 50% WP Formulation
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of all weeds with no adverse effect on potato yield
COMMENTS: Metribuzin alone or in combination with other materials very effective in controlling barnyard grass and lady's thumb; other chemicals also effective in maintaing commercially acceptable weed control throughout season
REFERENCE: Sanok, W.J. and L.E. Weber, "Evaluation of Potato Herbicides on Long Island 1974," Proc. Northeast. Weed Sci. Soc. 29:316-318 (1975).

<4794>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 0.3 to 0.8 kg/ha
APPLICATION METHODS: Addition to soil; laboratory sprayer; 413 l./ha at 2.11 kg/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soils-- Bledington and Boddington Barn; pot culture; temperature--13 to 23 C; pH--6.3 or 6.9 or 7.3
EFFECTS: Reduced growth of ryegrass with no effect by liming
COMMENTS: Metoxuron, fenuron, metribuzin, and fluometuron more active in Boddington Barn soil than in Bledington soil; prometryne similar in effect in both soils
REFERENCE: Richardson, W.G. and J.D. Banting, "The Phytotoxicity of Various Herbicides in Two Sandy Loam Soils and the Effect of Liming," Weed Res. 17(3):203-207 (1977).

<4795>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Quackgrass (AGROPYRON REPENS); Pine, white (PINUS STROBUS); Juniper, andorra (JUNIPERUS HORIZONTALIS); Yew, spreading (TAXUS CUSPIDATA); Euonymous, sarcoxie (EUONYMUS RADICANS); Nightshade, black (SOLANUM NIGRUM); Galinsoga, hairy (GALINSOGA CILIATA); Nettle, stinging (URTICA DIOICA); Sorrell, wood (OXALIS STRICTA); Yellow rocket (BARBAREA VULGARIS); Purslane, common (PORTULACA OLERACEA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 1.5 and 3 lb/A
APPLICATION METHODS: Formulation -- 50% WP; sprays applied with knapsack sprayer calibrated to deliver 50 gal/A; preplanting application
EXPERIMENTAL CONDITIONS: Silt loam soil; 10x12 ft plots; Fall--quackgrass 6 to 12 in. tall, air temperature 58 degree F, soil temperature at 3 in. depth 45 degree F; spring -- quackgrass 6 to 10 in. tall with 4 to 5 leaves, air temperature 63 degrees F, soil temperature at 3 in. 53 degrees F
EFFECTS: Annual weeds controlled but not quackgrass; moderate to severe injury to white pines, yews, junipers, and euonymus
COMMENTS: Author notes that woody ornamentals provide little competition to herbaceous weeds for light, moisture, and nutrients
REFERENCE: Ahrens, J.F., "Preplant Herbicides for Control of Quackgrass in Ornamentals," Proc. Northeast. Weed Sci. Soc. 28:372-378(1974).

<4796>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Bay 94437
PLANT: Broadleaf weeds; Grasses; Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.75 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, and postemergence sprays; 50 gal/A at 30 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1969 to 1971
EFFECTS: Effective control of all weeds with slight initial injury to potato but no adverse effect on yield

<4796> CONT.
(one year only) in postemergence application
COMMENTS: All treatments rated good to excellent in broadleaf weed control; all chemical treatments equal or superior to cultivation in control of broadleaf weeds
REFERENCE: Swingle, H.D. and C. Mullins, "Herbicide Trials with Irish Potatoes," Proc. S. Weed Sci. Soc. 26:256-258 (1973).

<4797>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Grasses; Broadleaf weeds; Plants; Mustard, wild (BRASSICA KABER)
EXPERIMENTAL DOSE: 0.37, 0.50, and 0.75 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 13 locations in Iowa
EFFECTS: Moderate weed control with no adverse effect on soybean
COMMENTS: Dinitroaniline chemicals applied at proper rates for organic matter levels present provided good to excellent grass control; rate probably more critical for organic matter on BAS-3901, CG-10832 and dinitramine than for trifluralin; organic matter exceedingly critical for nitraline; vernolate provided good grass control and at most locations, better broadleaf control than dinitroaniline chemicals; preplant incorporated plus overlay treatment can increase broadleaf and overall weed control and usually result in less phototoxicity to the crop
REFERENCE: Jennings, V.M., D.W. Staniforth, and W.G. Lovely, "Soybean Herbicide Evaluations Across Iowa in 1973," Proc. N. Cent. Weed Contr. Conf. 28:42-45 (1973).

<4798>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Moderate control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4799>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 0.25, 0.5 and 1.0 lb/A
APPLICATION METHODS: WP formulation; spray applied in 40 gpa volume
EXPERIMENTAL CONDITIONS: Sassafras loam soil; plots--4 rows or 14 ft x 20 ft; randomized block design with 3 replications; May 24 planting and August 8 ratings and harvest; center 2 rows of each plot used for yield determination
EFFECTS: 86% broadleaf and 69% grass control at 0.25 lb/A; 92% broadleaf and 76% grass control at 0.5 lb/A; 98% broadleaf and 83% grass control at 1.0 lb/A; no significant effect on corn yield; temporary stunting of corn plant at 1.0 lb/A
COMMENTS: Metribuzin described as showing promise for weed control in sweet corn
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

<4800>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Potato (SOLANUM TUBEROSUM); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 0.75, 1.0 and 2.0 lb/A
APPLICATION METHODS: WP treatments with spray applications at 30 psi and 40 gpa volume; preemergence and postemergence applications
EXPERIMENTAL CONDITIONS: Randomized block design with 3 replications for each experiment; plot size--4 rows or 12 ft x 20 ft; Sassafras loam soil; center 2 rows harvested for yield determination
EFFECTS: Preemergence treatment--93, 98 and 84% broadleaf and 72, 66 and 88% grass control at 0.75, 1.0 and 2.0 lb/A respectively; postemergence treatment--98, 96 and 96% broadleaf and 61, 66 and 84% grass control at 0.75, 1.0 and 2.0 lb/A respectively; no significant effect on potato yield
COMMENTS: Postemergence applications caused temporary marginal leaf burn and stunting--recovery in 2 to 3 wk; better control of broadleaf weeds than grasses
REFERENCE: Lay, M.M., W.J. McAvoy, and R.D. Ilnicki, "Some Promising Herbicides and Herbicide Combinations for Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 27:266-273 (1973).

<4801>
<4801>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 0.25, 0.38, and 0.59 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 12 locations in IA
EFFECTS: At 0.38 lb/A, effective control of broadleaf weeds and moderate control of grasses
COMMENTS: Preplant-incorporated treatments more consistent in grass and broadleaf weed control than preemergence treatments; preplant-incorporated herbicide butylate plus R-25788 and EPTC plus R-25788 and preplant or preemergence chemical such as alachlor and CGA-24705 provided good to excellent grass control but needed assistance of broadleaf controlling herbicides such as atrazine, cyanazine, and procyazine
REFERENCE: Studt, D.M. and V.M. Jennings, "Corn Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:146-150 (1975).

<4802>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Soybean (GLYCINE MAX); Sesbania, hemp (SESBANIA EXALTATA); Mexicanweed (CAPERONIA CASTANAEFOLIA); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 0.56 and 0.84 kg/ha
APPLICATION METHODS: Preemergence spray; 2.0 m swath
EXPERIMENTAL CONDITIONS: Field study; soil--heavy clay; evaluation time--2 or 6 wk
EFFECTS: Slight damage to soybean and moderate control of weeds at higher rate
COMMENTS: Linuron or metribuzin resulted in good control of hemp sesbania and mexicanweed; no preemergence herbicide tested gave good morningglory control, but metribuzin and RP-17623 resulted in fair control
REFERENCE: Eastin, E.F., "Control of Problem Weeds in Texas Soybeans," Proc. South. Weed Sci. Soc. 26:67-73 (1973).

<4803>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Soybean (GLYCINE MAX); Sesbania, hemp (SESBANIA EXALTATA); Mexicanweed (CAPERONIA CASTANAEFOLIA); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Dayflower, common (COMMELINA COMMUNIS)
EXPERIMENTAL DOSE: 0.84 and 1.12 kg/ha
APPLICATION METHODS: Postemergence spray; 2.0 m swath; 0.5% X-77 surfactant
EXPERIMENTAL CONDITIONS: Field study; soil--heavy clay; evaluation time--2 or 6 wk
EFFECTS: Moderate damage to soybeans with effective control of hemp sesbania and dayflower and moderate control of other weeds
COMMENTS: As postemergence treatments, bentazon plus surfactant applied topically and linuron plus surfactant or metribuzin plus surfactant directed gave good to excellent control of dayflower, hemp sesbania was controlled by treatments containing linuron, metribuzin or prometryne, all plus surfactant and directed; mexicanweed was controlled by directed applications of treatments containing linuron, metribuzin, prometryne or 2,4-DB, all plus surfactant; good control of morningglory was obtained with directed applications of treatments containing 2,4-DB, dinoseb + naptalam plus surfactant, or prometryne plus surfactant
REFERENCE: Eastin, E.F., "Control of Problem Weeds in Texas Soybeans," Proc. South. Weed Sci. Soc. 26:67-73 (1973).

<4804>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Soybean (GLYCINE MAX); Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Cotton (GOSSYPIUM HIRSUTUM); Pigweed (AMARANTHUS HYBRIDUS); Pea, Southern (LATHYRUS sp.); Bean, lima (PHASEOLUS LUNENSIS); Okra (HIBISCUS ESCULENTUS); Grasses; Broadleaf weeds; Cocklebur, Pennsylvanian (XANTHIUM PENSYLVANICUM); Morningglory (IPOMOEA sp.)
EXPERIMENTAL DOSE: 0.125, 0.2, 0.25, 0.4, 0.5, 0.6, and 1.0 lb/A
APPLICATION METHODS: Preemergence and postemergence directed
EXPERIMENTAL CONDITIONS: 4 year experiments, 1969-1972; various loam soils; multicrop screening trials in split block strip designs with 3 replications; yield tests arranged in randomized complete block designs with 2 to 4 row plots, 30 to 60 ft long with 3 replications; visual ratings
EFFECTS: Preemergence 0.125 lb/A--7% soybean vigor reduction, 63% grass and 97% broadleaf weed control, 28% cotton, 13% pea, 23% lima bean and 60% okra vigor reduction; preemergence 0.2 lb/A--6% soybean vigor reduction, 81% grass, 51.5% cocklebur, 75% pigweed, and 43.5% morningglory control; preemergence 0.25 lb/A--10% corn vigor reduction, 1.5% soybean vigor reduction, 76.5% grass, 97% broadleaf weed, 88.5% cocklebur, 98.5% pigweed, and 72% morningglory control; preemergence 0.4 lb/A--3.5% soybean vigor reduction, 96% grass, 73.5% cocklebur, 100% pigweed, and 65% morningglory control; preemergence 0.5 lb/A--20% corn vigor reduction, 27.6% soybean, 52% sorghum, 59% cotton, 33% pea, 73% lima bean, and 93% okra vigor reduction, 81% grass, 95% broadleaf weed, 73.6% cocklebur, 84% pigweed, and 62% morningglory control; postemergence 0.5 lb/A--23.5% corn, 37% soybean, and 15.6% sorghum vigor reduction, 80% grass, 74% broadleaf weed, 96% cocklebur, 96.5% pigweed, and 75.5% morningglory control; preemergence 0.6 lb/A--30% soybean vigor reduction, 97% grass, 93% cocklebur, 100% pigweed, and 75% morningglory control; preemergence 1.0 lb/A--30% corn, 60% soybean, 55% sorghum, 77% cotton, 77% pea, 97% lima bean, and 99% okra vigor reduction, 90% grass, 97.6% broadleaf, 76% cocklebur, 90% pigweed, and 81% morningglory control
COMMENTS: Preemergence treatments too phytotoxic for corn, cotton, sorghum, lima beans, okra and southern peas and marginal for soybeans; 0.5 lb/A postemergence in soybeans showed promise; cocklebur and pigweed sensitive to metribuzin; grass and morningglory control erratic; percentages given as effects are averages
REFERENCE: Overton, J.R., T. McCutchen, L.S. Jeffery, H. Morgan, J.F. Brown, and A.Y. Chambers, "Crop and Weed Response to Bay 94337 in Tennessee, 1969 to 1972," Proc. South. Weed Sci. Soc. 26:182-192 (1973).

<4805>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Carrot (DAUCUS CAROTA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; seedbeed prepared April 25; 4 replications; weed control evaluated on August 2
EFFECTS: Poor pigweed control, fair foxtail control
COMMENTS: Herbicide combinaticns also tested; no injury rating for carrots; heavy rains delayed planting until May 2
REFERENCE: Noll, C.J., "Evaluation of Eight Herbicides Alone and in Combination for Weed Control in Carrots," Proc. Northeast. Weed Sci. Soc. 28:167-171 (1974).

<4806>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Cucumber (CUCUMIS SATIVUS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Galinsoga (GALINSOGA PARVIFLORA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed, prostrate (AMARANTHUS BLITOIDES); Foxtail, giant (SETARIA FABERI); Purslane, common (PORTULACA OLERACEA); Lamb's-quarters (CHENOPODIUM ALBUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.25 and 0.5 lb/A
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Murrill loam; fall plowing, seedbed preparation the following May 28; cucumber planted 12 days later on June 10; herbicides applied 1 day after planting; single row plots 5 by 36 ft
EFFECTS: Poor weed control at 0.25 lb/A, fair control at 0.5 lb/A; moderate cucumber injury at 0.25 lb/A, severe injury at 0.5 lb/A; significant stand reduction at 0.5 lb/A
REFERENCE: Noll, C.J., "Herbicide Weeding of Cucumber Grown in a Stale Seed Bed," Proc. Northeast. Weed Sci. Soc. 29:262-263 (1975).

<4807>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Spurge, spotted (EUPHORBIA MACULATA); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Postemergence spray; June application
EXPERIMENTAL CONDITIONS: Golf course green; randomized complete block designs with 4 replications; turf appearance, turf density, and weed control assessed; untreated check as control
EFFECTS: Turf appearance--64, 98, and 103% of check at 7, 18, and 27 days respectively; no damage to turf density; 100% weed control 27 days after treatment
COMMENTS: Temporary bermudagrass injury; herbicide combinations also tested
REFERENCE: Johnson, B.J., "Spotted-Spurge Control in Bermudagrass Golf Greens with Herbicides: A Preliminary Report," Ga. Agric. Res. 18(2):24-25 (1976).

<4808>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Bluegrass, annual (POA ANNUA); Parsley-piert (ALCHEMILLA MICROCORPA); Speedwell, corn (VERONICA ARVENSIS); Clover, hop (TRIFOLIUM AGARIUM); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Preemergence spray; broadcast application in 376 l./ha water
EXPERIMENTAL CONDITIONS: 2-year test on golf course; Cecil loam and Cecil sandy loam; bermudagrass turf; winter experiments; terbutol, DCPA, and pronamide as chemical checks; visual ratings
EFFECTS: Bluegrass control--2 years, 88 and 85%; parsley-piert--2 years, 18 and 48% control; corn speedwell control--2 years, 75 and 95%; hop clover control--100 and 98%; bermudagrass--no significant effect
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<4809>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Peanut (ARACHIS HYPOGAEA); Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 0.14 and 0.28 kg/ha
APPLICATION METHODS: Preplanting incorporated and preemergence treatments in spray volume of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: 0.28 kg/ha--90% weed control 25 days after treatment and 24 days after planting, 39% weed control 72 days after planting, 55% and 35% crop injury at 24 and 72 days after planting, respectively; 0.14 kg/ha--75% weed control 24 days after planting and 28% after 72 days, 25% and no crop injury 24 and 72 days after planting, respectively
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<4810>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Broadleaf weeds; Grasses; Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.06, 0.25, and 0.50 lb/A
APPLICATION METHODS: Pretransplant incorporated and postemergence sprays 27 and 40 gal/A; all herbicides evaluated alone or in combination with metribuzin
EXPERIMENTAL CONDITIONS: Field study; soil--Aura sandy loam

<4810>
<4810> CONT.
EFFECTS: In pre- and postemergence applications, generally effective control of all weeds with slight vigor reduction of tomatoes
COMMENTS: Only U-27,267 performed at acceptable level of weed control when used alone; all pre-plant treatments followed by post-plant applications of metribuzin resulted in good weed control, one-half pound of metribuzin early post or late post was consistently the better treatment; none of post-plant metribuzin treatments resulted in significant injury to the tomatoes; all treatments resulted in increased tomato yield
REFERENCE: Grande, J.A. and T. Ombrello, "Weed Control in Transplanted Tomatoes with Metribuzin in Combination with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:219-224 (1975).

<4811>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Bayer 94337
PLANT: Plants; Potato (SOLANUM TUBEROSUM); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 1.0 lb/A; 50% WP
APPLICATION METHODS: Postemergence, preemergence, and preplant incorporated sprays; 38 gal/A; 20 psi; granular materials applied with cone-type applicator; varied combined treatments evaluated
EXPERIMENTAL CONDITIONS: Field study; three locations; rye cover crop after harvest
EFFECTS: Slight to moderate weed control with slight leaf necrosis of potato and no effect on rye in postemergence applications
COMMENTS: Most treatments did not result in commercially acceptable control levels because of a number of conditions which reduced effectiveness of weed control in 1972
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<4812>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Broadleaf weeds; Grasses; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.25, 0.50, and 1.00 lb/A; WP
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Sassafras loam
EFFECTS: Effective control of broadleafs and moderate control of grass weeds with no adverse effects on corn
COMMENTS: Effective combinations were alachlor + atrazine, prynachlor + atrazine, chlorbromuron + atrazine, and chlorbromuron + simazine; atrazine slightly more effective than simazine
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

<4813>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Soybean (GLYCINE MAX); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.38 and 0.75 lb/A; WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold loam; soybeans planted with no tillage in wheat stubble; evaluation time--1 mo; soybeans planted one day before herbicide applications
EFFECTS: Moderate control of weeds with slight reduction in vigor of soybean
COMMENTS: Only paraquat and glyphosate applied alone gave good weed control; Paraquat and metribuzin reduced soybean stands but not seriously; alachlor and penoxalin did not control panicum; penoxalin or linuron in combination with glyphosate or paraquat improved control of many weed species over penoxalin and linuron applied alone; combinations of the two with either of the contact herbicides (3-way combinations) did not improve degree of control effected by single herbicides applied with paraquat or glyphosate; combinations of RH-2915 and alachlor did not improve weed control over either herbicide applied alone; considerable improvement resulted when glyphosate or paraquat added to the combination
REFERENCE: Michieka, R.W., R.D. Ilnicki, and J.R. Justin, "Weed Control in Double-Crop Soybeans with Herbicides Applied Alone and in Combination with Paraquat or Glyphosate," Proc. Northeast. Weed Sci. Soc. 31:61-69 (1977).

<4814>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI)
EXPERIMENTAL DOSE: 0.28, 0.56, and 1.12 kg/ha
APPLICATION METHODS: Glasshouse experiments--preemergence and postemergence application; field experiments--preplanting incorporated and postemergence applications of 50% WP applied with CO(2) sprayer with 373 l./ha water
EXPERIMENTAL CONDITIONS: Glasshouse--plainfield sand soil, seedling mortality recorded from preemergence treatments; silty clay loam, postemergence treatments on soil and on plant, 3 replications; Field--Plainfield sand and Drummer silty clay loam, 20 plants per 2.7 m of row with 3 replicates in randomized block design
EFFECTS: Glasshouse--12 days after emergence all Campbell 1327 cultivar plants and 81% Heinz 1439 cultivar seedlings were dead at 0.56 kg/ha, both cultivars more tolerant to postemergence applications, wide range of tolerance among cultivars; field--no tomato plant deaths from preplanting applications, postemergence application gave injury within one week and injury increased with increasing rate but all plants recovered by 3 weeks, 1.12 kg/ha controlled weeds and did not injure fruiting tomatoes
COMMENTS: No visual injury to tomatoes from preplanting treatments; incorporated metribuzin gave better weed

<4814> CONT.
control than surface applied doses and also better fruit yields resulted; field studies indicate that metribuzin can be used either preemergence or postemergence; tomatoes more susceptible to injury when less than 10 cm tall
REFERENCE: Fortino, J., Jr. and W.E. Splittstoesser, "The Use of Metribuzin for Weed Control in Tomato," Weed Sci. 22(6):615-619 (1974).

<4815>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Bayer 94337
PLANT: Potato (SOLANUM TUBEROSUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: 50% WP spray applied with tractor mounted sprayer, 20 psi pressure and 38 gal/A volume; postemergence and preemergence treatments
EXPERIMENTAL CONDITIONS: April planting; plots--2 rows wide by 30 ft long; randomized complete block design; treatments replicated five times in experiments 1 and 3 and four times in others; total of 5 experiments; rye seeded following potato harvest
EFFECTS: Experiment 2--1.0 lb/A, necrosis observed on potato plants 4 days after application to both 4 and 8 inch plants, damage disappeared within 10-14 days, commercially unacceptable weed control, no effect on rye crop; experiment 4-- tip burn on potato plants with 1.0 and 1.5 lb/A that persisted 7-10 days, commercially unacceptable weed control, no effect on rye; experiment 5-- commercially unacceptable weed control, no effect on rye
COMMENTS: Author notes that growing conditions (cool spring and high June rainfall) caused vigorous weed growth and retarded potato growth, thus reason for commercially unacceptable weed control; herbicide combinations also discussed
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<4816>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Soybean (GLYCINE MAX); Cocklebur, common (XANTHIUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 1.1 kg/ha
APPLICATION METHODS: Preemergence (metribuzin); postemergence (bentazon); postemergence directed (dinoseb and 2,4-DB); 187 l./ha; varied combined and sequential treatments
EXPERIMENTAL CONDITIONS: Field study; soil--Sharkey clay loam; time period--1971 to 1973
EFFECTS: Moderate control of cocklebur with no adverse effect on soybean yield
COMMENTS: Sequential applications of metribuzin applied preemergence, and dinoseb, 2,4-DB, applied postemergence, provided at least 90% control of common cocklebur and increased soybean yields; use of single herbicide applications less effective than sequential applications, but metribuzin applied preemergence more effective in controlling common cocklebur and increasing soybean yields than single applications of any herbicide applied postemergence
REFERENCE: McWhorter, C.G. and J.M. Anderson, "Effectiveness of Metribuzin Applied Preemergence for Economical Control of Common Cocklebur in Soybeans," Weed Sci. 24(4):385-390 (1976).

<4817>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 0.28, 0.56, and 1.12 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: In transplant application, effective weed control with slight tomato phytotoxicity at highest rate; in postemergence application, effectiveness about same but tomato toxicity greater; of various herbicide combinations tried in transplant study, metribuzin and trifluralin appear most effective
COMMENTS: Metribuzin, napropamide, and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<4818>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Panicum, fall (PANICUM DICHOTOMIFLORUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 0.25 and 0.50
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold sandy loam; evaluation time--approx. 2 mos; corn harvested at maturity for yield data
EFFECTS: Effective control of lambsquarters but poor to moderate control of remaining weeds; reduced stand and yield of all corn varieties
COMMENTS: Seneca Chief most susceptible variety to yield reductions particularly from poorer herbicide treatments; all varieties showed injury from metribuzin; the best herbicide treatment was alachlor + MC 4379 80W
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "The Response of Several Sweet Corn Varieties to Various Herbicides and Herbicide Combinations," Proc. Northeast. Weed Sci. Soc. 28:175-181 (1974).

<4819>
<4819>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Velvetleaf (ABUTILON THEOPHRASTI); Potato (SOLANUM TUBEROSUM); Foxtail (SETARIA sp.)
EXPERIMENTAL DOSE: 0.56 and 1.12 kg/ha
APPLICATION METHODS: Preemergence spray; 363 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras sandy loam; evaluation times--2 and 3 mos
EFFECTS: Effective weed control with no effect on potato yield at both rates
COMMENTS: Chlorbromuron and metribuzin controlled weeds comparably to standard linuron; alachlor alone not effective but very effective used in combination with chlorbromuron, metribuzin, and linuron; postemergence application of metribuzin very phytotoxic to potatoes and weeds
REFERENCE: Henne, R.C. and R.T. Guest, "Alachlor, Chlorbromuron, and Metribuzin for Weed Control in Potatoes," Proc. Northeast. Weed Sci. Soc. 28:296-298 (1974).

<4820>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.28, 0.56, and 1.12 kg/ha
APPLICATION METHODS: Posttransplant sprays; 470 l./ha (greenhouse); 357 l./ha (field)
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; field study; trifluralin preplant incorporated for grass control; evaluation time--60% fruit ripening
EFFECTS: No phytotoxic effects at 0.28 kg/ha; in greenhouse phytotoxic effects observed at 0.56 kg/ha at all tomato plant stages up to flower bud opening
COMMENTS: Increased tolerance of tomato plants to metabuzin occurred with increased time after transplanting (age) and onset of flowering; timing of metribuzin application to tomato crop very important
REFERENCE: Henne, R.C. and R.T. Guest, "Tolerance of Tomato Plants to Postplanting Metribuzin," Proc. Northeast. Weed Sci. Soc. 28:253-256 (1974)

<4821>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Grasses
EXPERIMENTAL DOSE: 0.28, 0.56, and 1.1 kg/ha
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Field study; soil--Brookston clay loam; time period--1970 to 1972
EFFECTS: Moderate control of glasses at highest rates
COMMENTS: Triazine and urea herbicides reduced sucrose level of seedlings of barnyardgrass and yellow foxtail compared with their effectiveness in controlling these weeds by pre-emergence application to maize; in 2 years out of 3, a significant positive correlation obtained between sucrose content of the third leaf and number of these grasses on field plots 2 months after planting
REFERENCE: Marriage, P. B. and W. J. Saidak, "Control of Barnyardgrass and Yellow Foxtail by Herbicides in Relation to the Sucrose Content of the Seedling Leaves," Weed Res. 14(2):115-118 (1974).

<4822>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Broadleaf weeds; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: Preplant and preemergence sprays; 80 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Effective control of all weeds with no adverse effect on potato yield
COMMENTS: Most herbicides somewhat ineffective for annual grass control; S-6044, M&B20035, and oxadiazolin all ineffective for control of annual grasses; combinations of oryzalin with metribuzin, methazole, and linuron also provided good broadleaved weed and quackgrass control; oryzalin alone not effective for annual grass or quackgrass control
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in White Potatoes in Maine - 1973," Proc. Northeast. Weed Sci. Soc. 28:287-295 (1974).

<4823>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribusin
PLANT: Soybean (GLYCINE MAX); Sida, spiny (SIDA SPINOSA)
EXPERIMENTAL DOSE: 0.56 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soils--Loring silt loam and Collins silt loam; preplant soil incorporation of herbicides not effective for prickly sida; evaluation times--3 wk (preemergence) and 2 wk (postemergence)
EFFECTS: Effective control of sida for 2 of 3 years with slight vigor reduction and stand reduction in soybean
COMMENTS: Chlorbromuron provided better control of prickly sida than did linuron which was more consistently effective than naptalam plus dinoseb; chlorbromuron applied as preemergence treatment caused slight crop injury; in most cases preemergence treatments followed by cultivation were effective in providing season-long control; descending order of effectiveness for prickly sida control by the postemergence herbicides was: chlorbromuron, metribuzin, prometryne, dinoseb
REFERENCE: Jeffery, L.S., J. Connell, T. McCutchen, and J.R. Overton, "Response of Prickly Sida and Soybeans to Various Herbicides," Weed Sci. 24(2):202-204 (1976).

<4824>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 0.6 and 1.1 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l/ha; one or two applications
EXPERIMENTAL CONDITIONS: Field study; four locations in Georgia over three year period (1972 to 1974)
EFFECTS: Effective control of crabgrass only with two applications of 1.1 kg/ha; similar control of goosegrass at 0.6 kg/ha; no permanent injury to Bermudagrass
COMMENTS: Large crabgrass controlled satisfactorily at Griffin in 1972 and 1973 with single application of MSMA, however, repeated applications required for similar control at Griffin in 1974 and at Blairsville in 1973 and 1974
REFERENCE: Johnson, B.J., "Postemergence Control of Large Crabgrass and Goosegrass in Turf," Weed Sci. 25(3):404-409 (1975).

<4825>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Horseweed (CONYZA CANADENSIS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Foxtail, green (SETARIA VIRIDIS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Preemergence and postemergence treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Mattapeake silt loam; field experiments, 1974 to 1976; 10 by 20 ft plots, randomized complete block design with 4 replications; visual ratings; soybeans planted after barley harvest--double cropping, no-tillage soybeans; June 10 soybean planting
EFFECTS: Unacceptable horseweed control July 7, acceptable control August 6; unacceptable ragweed control both dates; barely acceptable foxtail control July 7, unacceptable control August 6; minor soybean injury on both dates
COMMENTS: All weeds except foxtail present at time of soybean planting and herbicide application; combinations with other herbicides also tested
REFERENCE: Parochetti, J.V., "Herbicides for No-Tillage Double Cropped Soybeans," Proc. Northeast. Weed Sci. Soc. 31:54-60 (1977).

<4826>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 0.3 to 1.0 lb/A
APPLICATION METHODS: Preemergence and preplanting incorporated treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: Preemergence--minor soybean injury except at 1.0 lb/A where serious injury occurred (vigor and stand reduction), excellent control of pigweed and lambsquarters, good to excellent foxtail control except at 0.3 lb/A, good control of nutsedge above 0.4 lb/A; preplanting--minor soybean injury and unsatisfactory weed control at 0.38 lb/A, serious soybean injury and good weed control at 0.75 lb/A
COMMENTS: Herbicide combinations also tested
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<4827>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Grasses; Broadleaf weeds; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.37 and 0.75 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 10 locations in Iowa
EFFECTS: At 0.37 lb/A, effective broadleaf weed control and moderate control of grasses with no adverse effect on soybean
COMMENTS: Preplant incorporated herbicides trifluralin, dinitramine, profluralin, alachlor, and vernolate effectively reduced grassy weed populations; tank mix addition of metribuzin and bifenox broadened the spectrum of weeds controlled; overlay treatments of metribuzin were also equally effective in broadening the spectrum of weed control; preemergence treatments provided excellent examples of grass and broadleaf weed control in soybeans
REFERENCE: Jennings, V.M., "Soybean Herbicide Evaluations Across Iowa in 1974," Proc. North Cent. Weed Control Conf. 29:79-83 (1974).

<4828>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Pigweed (AMARANTHUS sp.); Purslane, common (PORTULACA OLERACEA); Santa Maria (PARTHENIUM HYSTEROPHORUS); (PHYLLANTHUS AMARUS); Wiregrass (ELEUSINE INDICA); Junglerice (ECHINOCHLOA COLONUM); Crabgrass (DIGITARIA INSULARIS); Nutsedge, purple (CYPERUS ROTUNDUS); Groundnut (PANAX TRIFOLIUM); Soybean (GLYCINE MAX); Tomato (LYCOPERSICON ESCULENTUM); Carrot (DAUCUS CAROTA); Corn (ZEA MAYS); Pepper, hot (CAPSICUM ANNUUM); Bean, snap (PHASEOLUS VULGARIS); Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 0.6 and 1.2 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Loam soil; non-field experiments
EFFECTS: Crops in which unsafe at 0.6 kg/ha--carrot, maize, hot pepper, snapbean, and lettuce; crops in which safe at 0.6 kg/ha--groundnut, soybean, and tomato; crops in which unsafe at 1.2 kg/ha--carrot, maize, hot

<4828>
<4828> CONT.
pepper, snapbean, soybean, tomato, and lettuce; crops in which safe at 1.2 kg/ha-- groundnut; very good weed control at both rates
COMMENTS: Promising herbicides from these studies tested in field
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<4829>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Plants; Lotus (LOTUS PEDUNCULATUS)
EXPERIMENTAL DOSE: 0.6, 1.1, and 2.2 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Tokomaru silt loam, time period--1974 and 1975
EFFECTS: At all rates, moderate weed control with severely reduced growth and yield of lotus
COMMENTS: Dinoseb most effective of 6 pre-emergence herbicides tested and 2,4-DB best of 5 postemergence herbicides; crop showed no tolerance towards atrazine, cyanazine, metribuzin, or bentazone
REFERENCE: Ivens, G.W., "Preliminary Evaluation of Pre- and Post-Emergence Herbicides in "Maku" Lotus," Proc. 28th. New Zealand Weed and Pest Cont. Conf. 28:31-34 (1975).

<4830>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: Preplant incorporated, preemergence, or postemergence sprays; 80 gal/A at 40 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; soil--Caribon gravelly silt loam
EFFECTS: Moderate to effective control of weeds with no adverse effect on yield (0.5 lb/A, preemergence); moderate weed control with moderate phytotoxicity to potato (1.0 lb/A, early-postemergence); more effective in preemergence at 0.5 and 1.0 lb/A rates
COMMENTS: Oryzalin, oryzalin plus metribuzin, and RE 17111 did acceptable job of controlling mustard, lambsquarters, bindweed, ladysthumb, and chickweed; in one test, trifluralin, EPTC, EL-161, oryzalin, or metribuzin did not control quackgrass
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in Potatoes With Several Pre-Plant Incorporated, Preemergence, and Early Post Emergence Herbicides," Proc. N.E. Weed Sci. Soc. 30:235-238 (1976).

<4831>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Potato (SOLANUM TUBEROSUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 0.75 and 1.0 lb/A
APPLICATION METHODS: Preemergence, pre-plant incorporated, or postemergence sprays; 30 to 35 lb/sq in at 18 to 43 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Haven loam
EFFECTS: Preplant, 1.0 lb/A--moderate control of nutsedge and effective control of barnyardgrass with no adverse effect on potato
COMMENTS: Outstanding treatments were CGA 24705 applied preemergence or pre-soil incorporated, maintaining 80% control or better for at least three months; results excellent also with EPTC, alachlor, napropamide, and FMC 25213; several herbicides in combination also effective
REFERENCE: Selleck, G.W. and L.E. Weber, "Herbicide Trials for Yellow Nutsedge in Potatoes on Long Island," Proc. NE Weed Sci. Soc. 30:239-242 (1976).

<4832>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Soybean (GLYCINE MAX); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Lamb's-quarters (CHENOPODIUM ALBUM); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 0.25 lb/A; 50% WP
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Bucks silt loam
EFFECTS: Effective control of lambsquarters and slight to moderate control of other weeds with very slight soybean injury that had no effect on yield
COMMENTS: RH-2512 preemergence provided excellent control of large crabgrass, fall panicum, common lambsquarters, redroot pigweed, and smallflower galinsoga; RH-2915 preemergence provided weed control equivalent to RH-2512
REFERENCE: Hartnett, J.P., "Weed Control in Soybeans with RH-2512 and RH-2915," Proc. Northeast. Weed Sci. Soc. 29:4-8 (1975).

<4833>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Broadleaf weeds; Grasses; Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: 0.28
APPLICATION METHODS: Preplant incorporated (7 cm depth); preemergence and postemergence sprays; 308 l./ha; combined treatments
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: In postemergence, moderate control of broadleafs and slight control of grasses with no observed phytotoxicity but reduced yield of carrots; in preemergence, weed control essentially the same

<4833> CONT.
COMMENTS: Combination treatment consisting of trifluralin preplant incorporated followed by a postemergence application of linuron provided season long weed control; carrots tolerated postemergence applications of Hoe 23408 which selectively controlled annual grass weeds; combination of Hoe 23408 plus linuron resulted in more rapid weed kill than with either material alone
REFERENCE: Henne, R.C., "Chemical Weed Control in Carrots," Proc. Northeast Weed Sci. Soc. 31:238-243 (1977).

<4834>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Plants; Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM); Witchgrass, old- (PANICUM CAPILLARE); Bluegrass, annual (POA ANNUA); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Preemergence spray; 10 to 25 gal/A
EXPERIMENTAL CONDITIONS: Field study; 4 locations in ND, SD, and MN
EFFECTS: Moderate to effective weed control with no adverse effect on potatoes
COMMENTS: Penoxalin preemergence or lightly incorporated treatment after seeding wheat gave excellent annual weed control and demonstrated good selectivity; penoxalin also demonstrated good to excellent weed control in potatoes either as preemergence or dragoff treatment; penoxalin treatments produced good yields in both crops
REFERENCE: Jorgenson, E.M., C.B. Wingfield, and G.I. Nzewi, "Use of Penoxalin Herbicide for Weed Control in Spring Grains and Potatoes," Proc. North Cent. Weed Cont. Conf. 30:72-74 (1975).

<4835>
CHEMICAL NAME: 1,2,4-Triazin-5(4H)-one, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-
CHEMICAL COMMON NAME: Metribuzin
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Bermudagrass, common (CYNODON DACTYLON); Centipede grass (EREMOCHLOA OPHIUROIDES); St. Augustine's grass (STENOTAPHRUM SECUNDUM); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 0.3, 0.6, and 1.1 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l./ha; one or two applications
EXPERIMENTAL CONDITIONS: Field study; four locations in Georgia
EFFECTS: Two applications at 1.1 kg/ha required for effective control of both weeds; this caused moderate to severe damage to turf grasses but all except St. Augustine recovered
COMMENTS: Metribuzim and methazole as single treatments controlled 82 and 87% goosegrass, respectively; repeated treatments needed for similar control of large crabgrass; these treatments did not permanently injure bermudagrass or centipedegrass
REFERENCE: Johnson, B.J., "Turfgrass Tolerance and Weed Control with Methazole and Metribuzin," Weed Sci. 24(5):512-519 (1976).

<4836>
CHEMICAL NAME: 1,2,4-Triazine-3,5(2H,4H)-dione
PLANT: Henbane, black (HYOSCYAMUS NIGER)
EXPERIMENTAL DOSE: 5x10(-3) moles/l.
APPLICATION METHODS: 50 microliter daily bud application
EXPERIMENTAL CONDITIONS: Plants grown for 2-3 months; plants treated with 6 days of continuous light from same source or same illumination, together with daily 6-azuracil treatments; control plants grown in short-day conditions for entire study; after 6 days, all plants grown in non-inductive conditions (short days, 8 hr)
EFFECTS: Half of 6-azauracil treated plants remained in vegatative state
REFERENCE: Seidlova, F., J. Krekule, and L. Teltscherova, "Inhibition of Flowering in HYOSCYAMUS NIGER by 6-Azauracil without Suppression of Stem Growth," Nature 214:1146-1147 (1967).

<4837>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4) M
APPLICATION METHODS: Seed soaking in solutions for 24 hr. with shaking
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--24 C; in dark 6 da, then seedlines exposed to varying light intensities
EFFECTS: Inhibited carotene synthesis as well as altering other biochemical processes
COMMENTS: Amitrole, dichlormate, and pyriclor inhibited normal carotenogenesis in etiolated wheat seedlings; carotenoid precursors accumulated in treated plants; in dichlormate-treated plants, carotene accumulated, whereas phytofluene, phytoene, and carotene accumulated in amitrole- and pyriclor-treated plants
REFERENCE: Burns, E.R., G.A. Buchanan, and M.C. Carter, "Inhibition of Carotenoid Synthesis as a Mechanism of Action of Amitrole, Dichlormate, and Pyriclor," Plant Physiol. 47:144-148 (1971).

<4838>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Couchgrass(AGROPYRON REPENS); Velvetgrass, slender (HOLCHUS MOLLIS); Bentgrass, black (AGROSTIS GIGANTEA)
EXPERIMENTAL DOSE: 0.5 to 8.0 mg/pot
APPLICATION METHODS: Addition to soil surface and watered
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--18 to 28 C; photoperiod--18 hr; fluorescent tube supplemental light; soil--mixed sandy (80%) and organic (20%)
EFFECTS: At 4.0 or 8.0 mg/pot, moderate reduction of aerial shoot dry weight of A. REPENS and H. MOLLIS and slight growth reduction of A. GIGANTEA
COMMENTS: AGROPYRON REPENS, HOLEUS MOLLIS and AGROSTIS GIGANTEA much more susceptible to TCA applied to soil

<4838>
<4838> CONT.
at early developmental stages than to TCA applied later; in glasshouse, only small differences in response to TCA found between species; these differences overshadowed by differences in effect on clones within different species; aminotriazole showed much better effect on A. REPENS than on A. GIGANTEA; effect on H. MOLLIS was intermediate
REFERENCE: Bengt, W., "Effects of TCA and Aminotriazole on AGROPYRON REPENS (L.) Beauv., HOLCUS MOLLIS L. and AGROSTIS GIGANTES Roth," Swed. J. Agric. Res. 6:121-130 (1976).

<4839>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Apple (PYRUS MALUS)
EXPERIMENTAL DOSE: 2.2, 4.5 and 6.7 kg/ha
APPLICATION METHODS: Postemergent herbicide applied in spring; annual applications were 1, 2, and 3 times the recommended rate
EXPERIMENTAL CONDITIONS: Field studies conducted for 6 years; soil -- sandy clay loam surface overlying medium clay at 40-50 cm depth; average annual rainfall 640 mm; 6 mature trees for each treatment
EFFECTS: No injury or yield reduction
COMMENTS: Possible injury symptoms in second year masked by red spider mite infestation and hail storm in December; first season was dry and third season results masked again by spider mites and by drought
REFERENCE: Campbell, J.E. and A. D. Mears, "Effects of Long-Term Use of Several Herbicides on Apple Trees," Aust. J. Exp. Agric. Anim. Husb. 14(67):262-265 (1974).

<4840>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lily-turf (LIRIOPE sp.); Plants
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 90% WS formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate control of weeds with redcued LIROPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-94 (1972).

<4841>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Bursage, wollyleaf (FRANSERIA TOMENTOSA)
EXPERIMENTAL DOSE: 4.5 and 9.0 kg/ha
APPLICATION METHODS: Soil sterilant application with and without incorporation; postemergence sprays at varied stages of plant development; liquid sprays at 188 l/ha; pellets or granules broadcast by hand; oil emulsion or surfactant formulation
EXPERIMENTAL CONDITIONS: Field study; non-crop areas; time period--1962 to 1968; evaluation time--up to 3 yr; soil--clay loam
EFFECTS: Moderate control at both rates with oil emulsion somewhat better than surfactant formulation
COMMENTS: Fenac controlled woollyleaf bursage for 3 years in noncropped areas; effective control of woollyleaf bursage obtained when treated at bud stage or earlier with ester formulation of 2,4-D
REFERENCE: Smith, D.T., A.F. Wiese, and A.W. Cooley, "Woollyleaf Bursage Response to Selected Herbicides," Weed Sci. 20(6):554-556 (1972).

<4842>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Hibiscus (HIBISCUS ROSA)
EXPERIMENTAL DOSE: 4.9 to 315 micro g/leaf
APPLICATION METHODS: Applied as droplets to leaves with micropipette
EXPERIMENTAL CONDITIONS: Field study (hibiscus and guava); greenhouse study (sorghum and cotton)
EFFECTS: Leaf desiccation but no defolization within 7 days at 20 micro g/leaf
COMMENTS: Pentachlorophenol and AP-20 produced most rapid desiccation at high dosages; usually as effective as PCP and AP-20 within 1 to 2 days after treatment, and produced more extensive desiccation at lower dosages, especially on hibiscus, sorghum, and cotton; diquat, paraquat, cacodylic acid, and AP-20 produced complete defoliation of hibiscus within 5 days after treatment but diquat and paraquat were more effective at lower dosages than other defoliants; diquat completely defoliated hibiscus regardless of placement on leaf, but higher dosages required for effective desiccation when applied non-uniformly over leaf
REFERENCE: Bovey, R.W. and F.R. Miller, "Desiccation and Defoliation of Plants by Different Herbicides and Mixtures," Agron. J. 60(1):700-702 (1968).

<4843>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Effective control of shoot emergence at 10(-3)M; poor control at 10(-4)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4844>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Apple (PYRUS MALUS); Fescue, creeping red (FESTUCA RUBRA); Quackgrass (AGROPYRON REPENS); Bluegrass, annual (POA ANNUA); Orchard grass (DACTYLIS GLOMERATA); Crabgrass, large (DIGITARIA SANGUINALIS); Milkweed (ASCLEPIAS SYRIACA); Goldenrod (SOLIDAGO CANADENSIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Postemergence spray application delivered at 35 gal/A in April or early May
EXPERIMENTAL CONDITIONS: 2 apple orchards--trees 3 years old at start of experiment; 1 row = 1 herbicide treatment 36 sq. ft. area treated around each free; weed control and apple tree injury ratings made June 20 and September 20 for 10 consecutive years
EFFECTS: Orchard 2--81% broadleaf and 91% grass control on June 20, 57% broadleaf and 84% grass control on September 20; orchard 1--76% broadleaf and 92% grass control on June 20, 55% broadleaf and 74% grass control on September 20; no injury to apple trees
COMMENTS: Results reported represent 10 year summary; chemical weed control practical and safe for use in apple orchards; to reduce chance of apple tree injury, alternate herbicide treatment every other year; combinations of herbicides more effective than single herbicides except dichlobenil
REFERENCE: Langer, C.A., W.H. Smith, and G. Gebe, "Ten Consecutive Years of Weed Control in Each of Two Separate Apple Orchards in New Hampshire," Proc. Northeast. Weed Sci. Soc. 27:257-261 (1973).

<4845>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrol
PLANT: Skeleton weed (CHONDRILLA JUNCEA)
EXPERIMENTAL DOSE: 3X10(-5)M and 3X10(-2)M
APPLICATION METHODS: Brush application to foliage or to root sections; 0.1% Tween-20
EXPERIMENTAL CONDITIONS: Greenhouse study; sandy soil; pot or tube culture; temperature--15 to 20 C; two weeks after treatment, shoots excised and roots sectioned and planted; growth retardants applied directly to root sections; 40 cm roots cut in 5 cm sections
EFFECTS: Moved only to two most proximal root sections and inhibited bud formation at high concentration and promoted bud formation at low concentration
COMMENTS: Most effective herbicides picloram, and 2,4-dichlorophenoxy-acet-O-methylhydroxamic acid; each compound reduced bud formation along 40 cm of root; inhibition of regeneration by the sodium salt of 2,4-D decreased at temperatures above 25 C
REFERENCE: Caso, O.H. and N.P. Kefford, "Control of Regeneration in Roots of the Deep-Rooted Weed CHONDRILLA JUNCEA L.," Weed Res. 13(2):148-157 (1973).

<4846>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 20 and 30 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in all plants at 20 and 30 ppm; shoot--less than 50% inhibition in sorghum and oat at 20 and 30 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<4847>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Mustard (BRASSICA JAPONICA); Sorghum (SORGHUM BICOLOR); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, large (DIGITARIA SANGUINALIS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 13, 18, 23 and 35 ug; 0.22 mM
APPLICATION METHODS: Treatments applied to leaves in 500 to 5000 ppm (w/v) concentrations of ethanol:glycerol:water (50:50:1 v/v) containing dissolved herbicide; postemergence applications, premergence also on mustard
EXPERIMENTAL CONDITIONS: 2 test methods; method 1--seedlings grown in test tubes with bottom immersed in

<4847>
<4847> CONT.
nutrient medium, herbicide treatments applied to leaves, growth chamber grown plants (27 C and 16-hr day and 21 C dark period); method 2--mustard only, petri dish germination in medium containing 10 ml herbicide solution, chlorophyll content determined
EFFECTS: Mustard--23 ug caused seedling death within 14 days, 0.22 mM preemergence inhibited chlorophyll synthesis 37% and rooth growth 28%; sorghum--13 ug caused growth retardation, recovery began 2 to 3 weeks after treatment; pigweed--18 ug caused severe chlorosis and eventual death to about half of the seedlings; crabgrass--35 ug gave effects same as sorghum; bluegrass--severe chlorosis and death
COMMENTS: Phizobitoxine--bacterially produced phytotoxin from RHIZOBIUM JAPONICUM
REFERENCE: Owens, L.D., "Herbicidal Potential of Rhizobitoxine," Weed Sci. 21(1):63-66 (1973).

<4848>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Periwinkle, common (VINCA MINOR); St. John's-wort (HYPERICUM CALYCINUM); (DELASPERMA ALBA); (GAZANIA SPLENDENS); Ivy (HEDERA CANARIENSIS); Ivy, English (HEDERA HELIX); Iceplant (CARPOBROTUS EDULE); Stonecrop (SEDUM BREVIFOLIUM); Bugleweed (AJUGA REPENS)
EXPERIMENTAL DOSE: 1 lb/A
APPLICATION METHODS: Postemergence application using a knapsack sprayer at a pressure of 30 psi
EXPERIMENTAL CONDITIONS: Field experiments; July 26 applications--injury evaluations made September 1, September 30 and October 22 of the same year; each treatment replicated 4 times
EFFECTS: V. MINOR--minor injury; H. CALYCINUM--chlorosis; D. ALBA--severe yellowing; G. SPLENDENS--foliage discoloration; H. CANARIENSIS--chlorosis; H. HELIX--chlorosis; C. EDULE--slight chlorosis; S. BREVIFOLIUM--minor injury; A. REPENS--distortion and chlorosis for 7 wks
REFERENCE: Elmore, C.L., W.D. Hamilton, E. Johnson, and T. Kretchun, "Ground Cover Species Tolerance to Herbicide Applications," Calif. Agric. 26(3):3-4 (1972).

<4849>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Cogongrass (IMPERATA CYLINDRICA)
EXPERIMENTAL DOSE: 2.2 and 4.5 kg/ha
APPLICATION METHODS: Postemergence spray; 300 l./ha; 0.5% surfactant
EXPERIMENTAL CONDITIONS: Field study; pure cogongrass stands in near-dormant state; time period--1971 and 1972
EFFECTS: Slight-moderate control at both rates; regrowth in spring unless multiple applications used
COMMENTS: All soil sterilants provided acceptable control; single applications of TCA and dalapon controlled cogongrass without prolonged soil sterility
REFERENCE: Dickens, R. and G.A. Buchanan, "Control of Cogongrass with Herbicides," Weed Sci. 23(3):194-197 (1975).

<4850>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: (DIGERA ALTERNIFOLIA)
EXPERIMENTAL DOSE: 100 - 2000 ppm
APPLICATION METHODS: Soaking seeds, 6 to 96 hr
EXPERIMENTAL CONDITIONS: Seed placed on filter paper contained in petri plates; temperature 33.5--36.5 C; evaluation time--21 days
EFFECTS: Reduced germination at 1000 ppm (6 hr soak) and at 400 ppm after prolonged soaking (24, 48, and 96 hr); enhanced inhibition and mortality occurred in combination with 2,4-D and 2,4,5-T
COMMENTS: Herbicides may inhibit seed germination and retard seedling growth but not kill plant; longer herbicide contact time suggested
REFERENCE: Dubey, P.S. and L.P. Mall, "Effect of Herbicides on Germination, Viability, and Seed Growth of Weed Seeds. I. DIGERA ALTERNIFOLIA Aschers," Tropical Ecol. 16(1):39-42 (1975).

<4851>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Paragrass (PANICUM PURPURASCENS)
EXPERIMENTAL DOSE: 3.0 and 5.0 lb/A; 50% WS
APPLICATION METHODS: Postemergence spray; 25 gal/A; up to three repeat applications
EXPERIMENTAL CONDITIONS: Field study; soil--Humatas clay loam; evaluation time--up to 20 wk; clipped or non-clipped paragrass plots treated; combined applications
EFFECTS: Moderate control of paragrass at 3.0 lb/A with repeat applications or with single application at 5.0 lb/A for 8 wk
COMMENTS: Spray applied to regrowth generally gave better control for longer periods; best control obtained with dalapon + TCA applied twice; low rate initially and one-half rate at repeat application fully as effective as higher rate tested; dalapon alone nearly as effective as dalapon + TCA combination on both older growth and regrowth
REFERENCE: Whitney, A. S., A. V. Ramos, and A. S. Rios, "Chemical Control of Paragrass (BRACHIARIA MUTICA) in a Humid Upland Area," J. Agr. Univ. P. R. 57(2):129-135 (1973).

<4852>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Horehound (MARRUBIUM VULGARE)
EXPERIMENTAL DOSE: 2.0 and 4.5 lb/A; ester
APPLICATION METHODS: Postemergence spray; 25 gal/A
EXPERIMENTAL CONDITIONS: Field study; evaluation time--2.5 and 12 mos
EFFECTS: Moderate control of horehound
COMMENTS: Control of horehound plants possible with both 2,4-D and silvex
REFERENCE: Stritzke, J. F., "Germination Characteristics and Chemical Control of Horehound," J. Range Manag. 28(3):225-226 (1975).

<4853>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Broadleaf weeds; Grasses; Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 35 gal/A; dichlorobenil was a 4% G formulation
EXPERIMENTAL CONDITIONS: Field study; orchards in two locations; three varieties of apples; time period--1963 to 1972
EFFECTS: Effective control of grass weeds and moderate control of broadleafs with no adverse effect on apple
COMMENTS: All chemicals effective, but combinations gave more complete control of all weeds; several weeds gave slight problems in spots once the main weed competition killed out.
REFERENCE: Langer, C.A., W.H. Smith, and G. Gebe, "Ten Consecutive Years of Weed Control in Each of Two Separate Apple Orchards in New Hampshire," Proc. Northeast. Weed Sci. Soc. 27:257-261 (1973).

<4854>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Bromegrass, downy (BROMUS TECTORUM); Wheatgrass, intermediate (AGROPYRON INTERMEDIUM)
EXPERIMENTAL DOSE: 2.0 to 8.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 or 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; 2 locations in WA; time period--1959 to 1960
EFFECTS: At 4.0 to 8.0 lb rates, effective control of downy brome but moderate to severe damage of wheatgrass
COMMENTS: IPC and CIPC most effective herbicides for controlling downy brome without serious injury to perennial grasses grown for seed production; endothal gave good downy brome control
REFERENCE: Canode, C.L., W.C. Robocker, and T.J. Muzik, "Grass Seed Production as Influenced by Chemical Control of Downy Brome," Weeds 10(3):216-219 (1962).

<4855>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 X 10(-4) M
APPLICATION METHODS: Immersion of seeds in test solutions for 24 hr with shaking
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination at 24 C in darkness; evaluation time--6 days
EFFECTS: Inhibited carotenoid synthesis
COMMENTS: Amitrole, dichlormate, and pyriclor inhibited normal carotenogenesis; carotenoid precursors accumulated in treated plants; none interfered with protochlorophyllide synthesis or its conversion to chlorophyllide when etiolated plants were illuminated
REFERENCE: Burns, E.R., G.A. Buchanan, and M.C. Carter, "Inhibition of Carotenoid Synthesis as a Mechanism of Action of Amitrole, Dichlormate, and Pyriclor," Plant Physiol. 47:144-148 (1971).

<4856>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrol
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 500 micro M
APPLICATION METHODS: Addition to assay preparations of chloroplasts
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: No photochemical or photobleaching effects noted
COMMENTS: Dual wavelength spectrophotometry applied to observations of small spectral changes during biochemical reactions in intact tissue; based on principle that absorbance reading at wavelength of isobestic point of reaction fluctuates with time in same manner as reading at wavelength where an absorbance change due to reaction takes place
REFERENCE: Inoue, Y., Yaginuma, N., Ogawa, T., Konishi, K., and K. Shibata, "Spectral Changes of Chloroplasts as a Means to Examine Phytotoxic Effects of Herbicides," in Environmental Toxicology of Pesticides, F. Matsumura, G.M. Boush, and T. Misato (Eds.) Academic Press, New York and London, pp. 549-570 (1972).

<4857>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 8.0 to 16.0 lb/A, single and double applications
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate initial control with heavy regrowth (3 mo)
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing

<4857>
<4857> CONT.
regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<4858>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrol
PLANT: Rabbitbrush, green (CHRYSOTHAMNUS VISICIDIFLORUS); Rabbitbrush, grey (CHRYSOTHAMNUS NAUSEOSUS)
EXPERIMENTAL DOSE: 3.0 lb/A; butoxyethanol
APPLICATION METHODS: Foliar spray; 30 psi; 5.0 to 10.9 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1950 to 1955
EFFECTS: Slight to moderate control of both species
COMMENTS: Green and grey rabbitbrush more susceptible to 2,4-D esters than to any of other herbicides used; with 2,4-D esters, an acid equivalent rate of 3 lb/A gave good rabbitbrush control
REFERENCE: Hyder, D.N., F.A. Sneva, D.O. Chilcote, and W.R. Furtick, "Chemical Control of Rabbitbrush with Emphasis Upon Simultaneous Control of Big Sagebrush," Weeds 6(3):289-297 (1958).

<4859>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<4860>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Aster, blue wood (ASTER CORDIFOLIUS); Bindweed, field (CONVOLVULUS ARVENSIS); Bindweed, hedge (CONVOLVULUS SEPIUM); Carrot, wild (DAUCUS CAROTA); Chickweed, common (STELLARIA MEDIA); Chickweed, mouse-ear (CERASTIUM VULGATUM); Clover (TRIFOLIUM sp.); Copperleaf, Virginia (ACALYPHA VIRGINICA); Daisy, oxeye (CHRYSANTHEMUM LEUCANTHEMUM); Dandelion (TARAXACUM OFFICINALE); Dock, broad-leaf (RUMEX OBTUSIFOLIUS); Dogbane, hemp (APOCYANUM CANNABINUM); Fleabane, annual (ERIGERON ANNUS); Horsenettle (SOLANUM CAROLINENSE); Ironweed (VERONICA ALTISSIMA); Poison ivy (RHUS RADICANS); Ladysthumb (POLYGONUM PERSICARIA); Onion, wild (ALLIUM sp.); Plantain, broad-leaf (PLANTAGO MAJOR); Plantain, buckhorn (PLANTAGO LANCEOLATA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Sorrell, red (RUMEX ACETOSELLA); Spanish needles (BIDENS BIPINNATA); Vetch, common (VICIA SATIVA); Violet (VIOLA sp.); Sorrell, wood (OXALIS STRICTA); Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 4.48 and 22.4 kg/ha; ester and amine
APPLICATION METHODS: Postemergence spray; 1870 l./ha (low rate) and 9350 l./ha (high rate); applied to ground cover and soil beneath apple trees
EXPERIMENTAL CONDITIONS: Field study; annual applications over 6 yr period (1957 throug 1962)
EFFECTS: Slight to effective control of broadleaf weeds with little or no control of grass weeds and no adverse effect on apple
COMMENTS: Single applications 2,4,5-T ester, 2,4,5-T amine, and silvex to ground cover and soil under apple trees significantly reduced proportion of broadleaf plants to grasses; after six annual applications, ground cover consisted of almost pure stands of grasses; six applications of dinoseb + oil decreased proportion of broadleaf weeds to grasses; one application did not change proportion; one and six annual applications of dinoseb amine significantly reduced broadleaf weeds
REFERENCE: Schubert, O.E., "Plant Cover Changes Following Herbicide Applications in Orchards," Weed Sci. 20(1):124-127 (1972).

<4861>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Thistle, Russian (SALSOLA IBERICA); Corn (ZEA MAYS); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Eckman loam; crop rotation and herbicides evaluated for thistle control; time period--1958 to 1962
EFFECTS: Moderate thistle control (results variable) with no adverse effect on corn or oats
COMMENTS: Stands of Russian knapweed reduced over 80 per cent by several combinations of crops, cultivation and herbicides; two of best crop rotations in a 4-year trial were: (1) a short season of intensive cultivation and a mid-August seeding of bromegrass sprayed with 2,4-D; (2) bromegrass seeded with oat companion crop sprayed with 2,4-D ester; best use of non-selective herbicides in two 2-year trials was spring application of 2,3,6-TBA or PBA, plowing 10 days later, and a corn crop sprayed with 2,4-D ester
REFERENCE: Derscheid, L.A., W.H. Wallace, and L.J. Wrage, "Cropping, Cultivation and Herbicides to Eliminate Russian Knapweed and Prevent Reinfestation," Weeds 11(3):237-243 (1963).

<4862>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Bahiagrass (PASPALUM NOTATUM); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1.5 to 6.0 lb/A; propylene glycol butyl ether ester
APPLICATION METHODS: Foliar spray; 20 to 36.6 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; soils--Lakeland fine and coarse sand and Kanapaha fine sand; results in greenhouse and field similar; time period--1956 and 1957
EFFECTS: No or slight damage of mature bahiagrass with effective weed control thus allowing turf establishment
COMMENTS: Oil soluble 2,3,6-TBA killed all bahiagrass seedlings under greenhouse conditions; same treatments, applied to seedlings in field, killed a high percentage but not all plants; carrier consisting partially or entirely of diesel oil for other herbicidl treatments caused more severe damage to seedlings than water carrier for comparable treatments
REFERENCE: Black, C.C. and E.G. Rodgers, "Response of Pensacola Bahiagrass to Herbicides," Weeds 8(1):72-77 (1960).

<4863>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Amitrole
PLANT: Bamboo (BAMBUSA ARUNDINACEA); Bamboo (BAMBUSA TEXTILIS); Bamboo (BAMBUSA TULDA); Bamboo, common (BAMBUSA VULGARIS); Bamboo (DENDROCALAMUS ASPER); Bamboo, solid (DENDROCALAMUS STRICTUS); Bamboo (GIGANTOCHLOA APUS); Bamboo, running type (PHYLLOSTACHYS BAMBUSOIDES); Bamboo (PHYLLOSTACHYS MEYERI); Bamboo (SINOCALAMOUS OLDHAMI)
EXPERIMENTAL DOSE: 0.4 to 1.6 lb/50 culms; 0.05% Tween-20
APPLICATION METHODS: Basal watering or foliage spray; 2 gal/50 culms
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to severe damage or kill of all species
COMMENTS: Most effective treatments monuron, TCA, and dalapon to bases of intact or cut bamboo culms and amitrole as spray to regrowth foliage; combinations of herbicides found most effective on common bamboo, B. VULGARIS; for highly resistant species, second treatment necessary
REFERENCE: Cruzado, H.J., T.J. Muzik, and W.C. Kennard, "Control of Bamboo in Puerto Rico by Herbicides," Weeds 9(1):20-26 (1961).

<4864>
CHEMICAL NAME: 1,2,4-Triazol-3-amine, 1H-
CHEMICAL COMMON NAME: Aminotriazole
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: Preemergence mustard--serious injury or death at all rates; preemergence wheat--serious injury or death at all rates; postemergence mustard--serious injury at 200 and 400 g mole/ha; postemergence wheat--moderate to severe plant injury at 200 and 400 g mole/ha
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4865>
CHEMICAL NAME: 1,2,4-Triazole-3,4-diamine, 1H-, hydrogen bromide salt
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: Minor mustard injury at 400 g mole/ha, somewhat more pronounced with preemergence treatment; minor preemergence wheat injury at 200 and 400 g mole/ha, no postemergence injury
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4866>
CHEMICAL NAME: 1,2,4-Triazole-3,5-diamine, 1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: No mustard or wheat injury
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4867>
<4867>
CHEMICAL NAME: 1,2,4-Triazole-5-amine, 3,3'-(1,2-ethandiyl)bis-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: No mustard or wheat injury
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4868>
CHEMICAL NAME: 1,2,4-Triazole-5-amine, 3,3'-methylenebis-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: No mustard or wheat injury
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4869>
CHEMICAL NAME: 1,2,4-Triazole, 1-carboxamine-N-ethyl-N-propyl-3-(propylsulfonyl)-1H-
CHEMICAL COMMON NAME: BTS 30843
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Corn (ZEA MAYS); Wiregrass (ELEUSINE INDICA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Soybean (GLYCINE MAX); Lamb's-quarters (CHENOPODIUM ALBUM); Carpetweed (MOLLUGO VERTICILLATA); Peanut (ARACHIS HYPOGAEA); (ACANTHOSPERMUM HISPIDUM); Pusley, Florida (RICHARDIA SCABRA); Cotton (GOSSYPIUM HIRSUTUM); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 0.5, 0.75, 1.0, 1.25, 1.5, 1.75, and 2.0 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies in Florida, South Carolina, and Georgia
EFFECTS: D. SANGUINALIS, E. INDICA, and P. OLERACEA completely killed at 2.0 kg/ha; moderate A. RETROFLEXUS control at 2.0 kg/ha; good control of M. VERTICILLATA at 1.5 kg/ha and of other weeds at 2.0 kg/ha; no corn, soybean, or peanut injury; unacceptable cotton injury at 2.0 kg/ha; P. OLERACEA completely controlled at 1.0 kg/ha
COMMENTS: Soil applications better than foliar treatments for weed control; excellent grass weed control demonstrated in Europe, Australia, and the U.S.; other weeds listed along with lowest rates required for control
REFERENCE: Copping, L.G. and R.F. Brooks, "BTS 30 843 - A New Pre-emergence Grass Herbicide," Proc. Brit. Weed Control Conf. 12(2):809-915 (1974).

<4870>
CHEMICAL NAME: 1,2,4-Triazole, 3-amino-5-(phenoxymethyl)-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: Moderate injury to mustard at 400 g mole/ha preemergence and 200 and 400 g mole/ha postemergence; no preemergence wheat injury, moderate postemergence injury at 400 g mole/ha
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4871>
CHEMICAL NAME: 1,2,4-Triazole, 3-amino-5-(1-methylethyl)-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: Mustard injury moderate at 400 g mole/ha, somewhat greater with postemergence treatment; minor preemergence and minor to moderate postemergence wheat injury at 400 g mole/ha
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4872>
CHEMICAL NAME: 1,2,4-Triazole, 3-amino-5-(2,4-dichlorophenoxymethyl)-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: Moderate mustard injury at 400 g mole/ha, somewhat more pronounced with preemergence treatment; no preemergence wheat injury, moderate postemergence injury at 400 g mole/ha
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4873>
CHEMICAL NAME: 1,2,4-Triazole, 3-amino-5-ethyl-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: Moderate to severe injury to mustard from preemergence 200 and 400 g mole/ha; moderate postemergence mustard injury and moderate pre-and postemergence wheat injury at 200 and 400 g mole/ha
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4874>
CHEMICAL NAME: 1,2,4-Triazole, 3-amino-5-methyl-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: Moderate preemergence mustard and wheat toxicity at 200 and 400 g mole/ha; postemergence toxicity somewhat greater
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4875>
CHEMICAL NAME: 1,2,4-Triazole, 3-amino-5-phenyl-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: Minor pre- and postemergence mustard injury at 400 g mole/ha; no wheat injury
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4876>
CHEMICAL NAME: 1,2,4-Triazole, 3-amino-5-phenylmethyl-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: Minor injury to mustard at 200 and 400 g mole/ha, somewhat more pronounced with postemergence treatment; no injury to wheat
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4877>
<4877>
CHEMICAL NAME: 1,2,4-Triazole, 3-chloro-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: Moderate preemergence and minor postemergence wheat and mustard injury at 400 g mole/ha
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4878>
CHEMICAL NAME: 1,2,4-Triazole, 3-hydroxy-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: No preemergence mustard injury, minor postemergence injury at 400 g mole/ha; minor preemergence and moderate postemergence wheat injury at 400 g mole/ha
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4879>
CHEMICAL NAME: 1,2,4-Triazole, 3-mercapto-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: No mustard or wheat injury
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4880>
CHEMICAL NAME: 1,2,4-Triazole, 4-amino-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: Minor preemergence mustard at 100, 200, and 400 g mole/ha, minor postemergence injury at 400 g mole/ha; no wheat injury
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4881>
CHEMICAL NAME: 1,2,4-Triazole, 4-amino-3-hydrazino-4H-, hydrochloride
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: No mustard or wheat injury
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4882>
CHEMICAL NAME: 1,2,4-Triazole, 5,5'-amino-3,3'-Bi-1H-
PLANT: Mustard, white (BRASSICA ALBA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 25, 50, 100, 200, and 400 g mole/ha
APPLICATION METHODS: Pre- and postemergence; 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse studies; 5 replications of each treatment; final results recorded 3 weeks after treatment
EFFECTS: No mustard or wheat injury
COMMENTS: Seventeen derivatives of aminotriazole studied, none found to be as ideal for herbicidal action as the parent compound
REFERENCE: Gomaa, E.A.A., "1,2,4-Triazoles I. The Relationship of Structure to Phytotoxicity," Acta Phytopathol. Acad. Sci. Hung. 3:175-180 (1968).

<4883>
CHEMICAL NAME: 1,3-Benzenecarbonitrile, 2,4,5,6-tetrachloro-
CHEMICAL COMMON NAME: Daconil
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/100 gal
APPLICATION METHODS: Postemergence (postflowering) spray; 50-55 psi to run-off; sprayed 2X
EXPERIMENTAL CONDITIONS: Field (29.5 C) and laboratory (19 C); intact flowers in field and cut flowers in laboratory; spray applied directly to flowers
EFFECTS: No adverse effect on flowers
COMMENTS: Some compounds not phytotoxic after two applications under any conditions (daconil, dithane M-15, dithane Z-78, morsodren, orthocide, phosdrin and thuricide); among phytotoxic chemicals and combinations, there was a greater tendency for injury occurring at 1) high temperature than at the low, 2) fast drying rate than the slow, 3) high temperature at fast rather than slow drying rate, and 4) high temperature at fast drying rate than low temperature at the slow rate
REFERENCE: Engelhard, A.W., "Chemical Sprays: Concentration, Drying Rate and Temperature Effects on Chrysanthemum Flower Quality", Florida State Hort. Soc. 85:370-374 (1973).

<4884>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: USB-3584
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA)
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: In preplanting application, USB 3584 gave satisfactory crop tolerance and good control of pigweed and lambsquarters; ragweed not controlled satisfactorily
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<4885>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: USB-3584
PLANT: Beggarweed, Florida (DESMODIUM TORTUOSUM); Pusley, Florida (RICHARDIA SCABRA) ; Peanut (ARACHIS HYPOGAEA); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.25, 0.50, 0.75, 1.0, 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Herbicides applied broadcast in 16 to 19 gallons of water per acre, spraying pressure 30psi using tractor-mounted compressed air sprayer; preplanting and preemergence applications
EXPERIMENTAL CONDITIONS: Dothan loamy sand; soil turned each winter and seedbeds prepared in March or early April; plots -- 6 rows wide each 20 feet long; herbicides in rows 3,4,5 and 6 incorporated 4 to 6 inches; peanuts planted immediately after incorporation; rows 1 and 2 had preemergence application
EFFECTS: 0.75, 1.5 and 1.0 lb/A gave almost complete control of annual grassweeds; preemergence applications less effective than preplant incorporated herbicides; broadleaf weed control generally less than grassweed control; no noticeable injury to peanut foliage
COMMENTS: Excellent control of annual grass weeds and substantial broadweed control; in general, increasing application rate of preemergence herbicides improved weed control; no measurable differences in weed control among herbicides tested
REFERENCE: Buchanan, G.A., R.D. McLaughlin, J. Bannon, and H. Ivy, "Performance of Dinitroaniline Herbicides in Peanuts," Proc. S. Weed Sci. Soc. 26: 95-105 (1973).

<4886>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Cabbage (BRASSICA OLERACEA); Purslane, common (PORTULACA OLERACEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pineappleweed (MATRICARIA MATRICARIODY)
EXPERIMENTAL DOSE: 0.3 lb/A
APPLICATION METHODS: Preplant incorporated; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; supplemental irrigation; crops direct seeded
EFFECTS: Effective control of barnyardgrass, moderate control of purslane, and slight control of pineappleweed with slight phytotoxicity to cabbage

<4886>
<4886> CONT.
COMMENTS: Outstanding candidates for selectivity in seeded cabbage and control of barnyardgrass, purslane, and pineappleweed were H22234 and oryzalin; alachlor also gave excellent control but initial stunting of cabbage seedlings; by end of the season, phytotoxicity not visible with alachlor or any other treatment.
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicides for Weed Control in Sweet Corn and Cabbage," Proc. Northeast. Weed Sci. Soc. 31:256-260 (1977).

<4887>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Grasses; Broadleaf weeds; Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.33, 0.50, and 0.67 lb/A
APPLICATION METHODS: Preplant incorporated; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 13 locations in Iowa
EFFECTS: Effective control of grasses and moderate control of broadleaf weeds with no adverse effect on soybean
COMMENTS: Dinitroaniline chemicals applied at proper rates for organic matter levels present provided good to excellent grass control; rate probably more critical for organic matter on BAS-3901, CG-10832 and dinitramine than for trifluralin; organic matter exceedingly critical for nitraline; vernolate provided good grass control and at most locations, better broadleaf control than dinitroaniline chemicals; preplant incorporated plus overlay treatment can increase broadleaf and overall weed control and usually result in less phototoxicity to the crop
REFERENCE: Jennings, V.M., D.W. Staniforth, and W.G. Lovely, "Soybean Herbicide Evaluations Across Iowa in 1973," Proc. N. Cent. Weed Contr. Conf. 28:42-45 (1973).

<4888>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Couchgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-5) M, 10(-6) M, and 10(-7) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-5) and 10(-6) M; moderate control 10(-7) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4889>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA LUTESCENS); Sunflower (HELIANTHUS ANNUUS); Velvetleaf (ABUTILON THEOPHRASTI); Venice mallow (HIBISCUS TRIONUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed (AMARANTHUS sp.); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Preplanting incorporated treatments; 1.5 gal capacity plot sprayer regulated to apply 30 gal per acre
EXPERIMENTAL CONDITIONS: Test compound mixed with water to make 1 gal of spray solution; 3 replicates, randomized complete block design; 4 to 5 rows wide by 40 ft long; multiple test locations
EFFECTS: 77% grass control; 59% broadleaf control; no soybean injury reported
COMMENTS: Foxtails--grasses; other weeds--broadleaf; combinations of herbicides also teste d
REFERENCE: Seim, A.L. and V.M. Jennings, "Soybean Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:54-58 (1975).

<4890>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Soybean (GLYCINE MAX); Velvetleaf (ABUTILON THEOPHRASTI); Millet, foxtail (SETARIA ITALICA)
EXPERIMENTAL DOSE: 1X10(-5), 1X10(-6), and 1X10(-7) M
APPLICATION METHODS: Solution addition to sand (75 ml/pot in greenhouse study); solution addition to nutrient agar (laboratory study)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand culture in pots (cups); temperature--21 C (day) and 17 C (night); evaluation time--28 days; laboratory study; temperature--30 C in darkened incubator
EFFECTS: At 1X10(-5) M, growth reduction for all species
COMMENTS: Dinitramine most toxic to each species; dinitramine, trifluralin, and BAS-3921 H most inhibitory of soybean shoot growth, while oryzalin, dinitramine, and BAS-3921 H most inhibitory of root growth
REFERENCE: Harvey, R.G., "Relative Phytotoxicities of Dinitroaniline Herbicides," Weed Sci. 21(6):517-520 (1973).

<4891>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: USB-3584
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.33 and 0.67 lb/A
APPLICATION METHODS: Preplanting incorporated; application at 17.6 gpa in 1972 and 21 gpa in 1973
EXPERIMENTAL CONDITIONS: Memphis silt loam; field tests; herbicides used at suggested and twice the suggested rates; 2 year experiment; randomized complete block design with 4 replications; plots--eight 38-inch rows 30 ft long, 4 center rows harvested for soybean yield determination; entire area plowed before planting

<4891> CONT.
each year; dyanap added for broadweed weed control; plots also cultivated at timely intervals; cultivated checks, 9.1 Bu/A (1972), 16.0 Bu/A (1973)
EFFECTS: 1972--35% seedling, 9 and 0% rhizome control on June 13, June 13, and Nov. 11 respectively at 0.33 lb/A, 86% seedling, 30 and 18% rhizome control respectively at 0.67 lb/A; 1973--22% seedling, 30, 43, and 15% rhizome control on June 4, June 4, Aug. 14, and Nov. 2 respectively at 0.33 lb/A, 67% seedling, 62, 79, and 55% rhizome control respectively at 0.67 lb/A; soybean yield--13.1 and 19.1 Bu/A in 1972, 26.9 and 32.4 Bu/A in 1973 at 0.33 and 0.67 lb/A respectively
COMMENTS: No soybean injury reported
REFERENCE: Overton, J.R., J.A. Mullins, and L.S. Jeffery, "Control of Johnsongrass in Soybeans with Preplant Incorporated Herbicides," Tenn. Farm Home Sci. Prog. Rep. 90:5-7(1974).

<4892>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Panicum, Texas (PANICUM TEXANUM); Sida, spiny (SIDA SPINOSA); Cotton (GOSSYPIUM HIRSUTUM); Peanut (ARACHIS HYPOGAEA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.37, 0.56, and 1.12 kg/ha
APPLICATION METHODS: Preplanting incorporated; application by experimental-plot tractor-sprayer
EXPERIMENTAL CONDITIONS: Field study; randomized block design, 2.74 by 7.62 m plots with 3 replications; Vanoss loam soil--pH of 5.1, 1.2% organic matter; 3 crops and 2 weed species, crop rows 7.62 m long with 7.62 cm centers, weeds planted between crop rows; visual ratings after 16 days
EFFECTS: Panicum control--93, 93, and 100% at respective rates; prickly sida control--67, 50, and 77% at respective rates; cotton injury--13, 3, and 30% of crop at respective rates; peanut injury--7, 27, and 17% of crop at respective rates; soybean injury--0, 0, and 50% of crop at respective rates
COMMENTS: Comparison of 9 dinitroaniline compounds; cotton was least tolerant of increased dinitroaniline herbicide rates, soybeans the most tolerant; definable phytotoxicity variation as chemical structure changes
REFERENCE: Murray, D.S., P.W. Santelmann, and H.A.L. Greer, "Differential Phytotoxicity of Several Dinitroaniline Herbicides," Agron. J. 65:34-36 (1973).

<4893>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 0.56 kg/ha
APPLICATION METHODS: Preplanting incorporated applications in spray volumes of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: 25% weed control 25 days after treatment
COMMENTS: Hophornbeam copperleaf--southwestern weed prevalent in peanuts
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<4894>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Oat, wild (AVENA FATUA); Foxtail, green (SETARIA VIRIDIS); Rapeseed (BRASSICA CAMPESTRIS); Rapeseed (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 0.56, 0.84, 1.12 and 1.4 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments applied in 202 l./ha water in 1971 and 1973 and in 102 l./ha in 1974
EXPERIMENTAL CONDITIONS: Field experiments--3 years; sandy loam soil in 1973 experiment, clay loam soil in 1971 and 1974 tests; plots--6.25 X 1.83 m with 8 rows spaced 22.9 cm apart; randomized complete block design with 4 replicates; control was an untreated check
EFFECTS: 1971--0.56 kg/ha gave good foxtail control, no significant effect on rapeseed yield, 0.84 kg/ha gave good control of foxtail and wild oat, decrease in rapeseed yield but recorded as not being significant, 1.12 kg/ha gave good control of foxtail and decrease in rapeseed yield but it was not significant; 1973 and 1974--1.4 kg/ha gave good control of foxtail and wild oat but in 1974 rapeseed tolerance and yield were significantly reduced, 1973 treatment gave a significant increase in crop yield
COMMENTS: Rapeseed--oilseed crop; drought conditions and insects reduced 1974 crop yields; foxtail population very light in 1971
REFERENCE: Chow, P.N.P., "Dinitroaniline Herbicides for Grassy Weed Control in Rapeseed," Can. J. Plant Sci. 56:705-713 (1976).

<4895>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Spinach (SPINACIA OLERACEA); Grasses; Purslane, common (PORTULACA OLERACEA); Crabgrass, large (DIGITARIA SANGUINALIS); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA)
EXPERIMENTAL DOSE: 0.33 and 0.66 lb/A; 2% EC
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence applications
EXPERIMENTAL CONDITIONS: Field study; soil--Norfolk loamy sand; irrigation
EFFECTS: Effective control of weeds with moderate injury to and reduced yield of lima beans
COMMENTS: Acceptable weed control and yields obtained with trifluralin and profluralin; dinitramine significantly reduced stand, vigor, and yields of baby lima beans; alachlor provided acceptable weed control without yield reduction; combined herbicide applications just as effective
REFERENCE: Beste, C.E., "New Herbicides for Lima Beans," Proc. Northeast. Weed Sci. Soc. 29:194-196 (1975).

<4896>
<4896>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Johnson grass (SORGHUM HALEPENSE); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.4 and 0.7 kg/ha
APPLICATION METHODS: Preplant incorporation; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Bosket sandy loam and Sharkey clay
EFFECTS: Moderate control of johnsongrass at 0.7 kg/ha with slight initial injury to soybean but no adverse effect on yield
COMMENTS: On Bosket sandy loam soil, best average johnsongrass control over a 2-yr period obtained following profluralin and butralin; these treatments also resulted in highest average soybean yields
REFERENCE: McWhorter, C.G., "Johnsongrass Control in Soybeans with Soil-Incorporated Dinitroaniline Herbicides," Weed Sci. 25(3):264-267 (1977).

<4897>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Grasses
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: Drag-off spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Slight to moderate control of broadleafs and quackgrass with effective control of annual grasses and no adverse effect on potato yield
COMMENTS: Metolachlor applied preemergence and penoxalin applied layby did not provide satisfactory control of broadleaved weeds; none of the drag-off treatments with dinitramine, USB-3153, or trifluralin controlled broadleaved weeds; USB-3153 and trifluralin applied at drag-off did not give satisfactory control of quackgrass
REFERENCE: Murphy, H.J. and T. Gajewski, "Effect of Several Herbicides Applied Preemergence, at Drag-Off and Layby on Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 31:176-179 (1977).

<4898>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: COBEX
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Nightshade, black (SOLANUM NIGRUM); Foxtail, giant (SETARIA FABERI); Foxtail, green (SETARIA VIRIDIS); Foxtail, purple (SETARIA sp.); Foxtail, yellow (SETARIA GLAUCA); Nightshade, hairy (SOLANUM sp.); Kochia (KOCHIA SCOPARIA); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed (AMARANTHUS sp.); Purslane, common (PORTULACA OLERACEA); Sandbur (CENCHRUS ECHINATUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Bean, kidney (PHASEOLUS VULGARIS); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 0.33, 0.50, and 0.67 lb/A
APPLICATION METHODS: Soil incorporation (preplant) with disks or cultivators to depth of 1.5-3.0 in.
EXPERIMENTAL CONDITIONS: Field study; all major soil types in CA, CO, ID, MT, WA and WY
EFFECTS: All three rates effectively controlled broadleaves and grasses with hairy nightshade and smartweed being the most difficult to control; slight damage (4%) to dry beans occurred only at the high rate; chief weed problem in beans is black nightshade which was controlled at all three application rates
COMMENTS: COBEX showed definite potential as selective herbicide for dry and green beans when compared with several conventional herbicides
REFERENCE: Harris, G.K. and J.D. Stone, "COBEX - A New Herbicide for Beans," Proc. West. Soc. Weed Sci. 27:47 (1974).

<4899>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 0.28 and 0.56 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: In transplant application, slight control of broadleaf weeds and effective control of grass at high rate but slight tomato toxicity at high rate
COMMENTS: Metribuzin, napropamide, and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<4900>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Squash, summer (CUCURBITA PEPO); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass (DIGITARIA sp.); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 4.0 and 6.0 lb/A
APPLICATION METHODS: Preplant application with soil incorporation; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Poor to moderate control of broadleaf weeds; moderate to effective control of grasses; slight reduction in squash vigor
COMMENTS: Outstanding preplant incorporated treatment was bensulide followed by chloramben, methyl ester

<4900> CONT.
applied preemergence; outstanding preemergence treatment for both weed control and yield was chloramben, methyl ester + asulam; crop injury induced by following preplant incorporated treatments: dibutalin, dinitramine (USB 3584), nitralin, and bensulide followed by naptalam applied preemergence
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "Some Promising Herbicides for Weed Control in Summer Squash," Proc. Northeast. Weed Sci. Soc. 28:224-228 (1974).

<4901>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Pea, sweet (PISUM SATIVUM); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Mustard, wild (BRASSICA KABER); Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.42, 0.84, and 1.68 kg/ha
APPLICATION METHODS: Solution addition to pea seed (germination); field spray 187 l/ha at 183 kg/sq cm; soil incorporation preplant
EXPERIMENTAL CONDITIONS: Greenhouse study--plastic cup culture (germination); silica sand; 21 C (day) and 17 C (night), evaluation time-21 days; field study; soil--Plano silt loam, pH-6.3, evaluation times--21 days and at harvest
EFFECTS: No adverse effect on pea and effective control of all weeds in field; reduced emergence and shoot dry weight of pea in solution culture (germination) study
COMMENTS: Field trials conducted over 3-yr period demonstrated that all eight herbicides successfully controlled weeds; use of trifluralin resulted in lowest shelled pea yields; significant reductions in yield occurred from trifluralin in 1973 and 1975 when compared with the untreated checks
REFERENCE: Harvey, R.G. and G.L. Jacques, "Dinitroaniline Herbicides for Weed Control in Peas," Weed Sci. 25(3):256-259 (1977).

<4902>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Soybean (GLYCINE MAX); Foxtail, green (SETARIA VIRIDIS); Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 0.5 and 0.67 lb/A
APPLICATION METHODS: Preemergence treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies, 1972 to 1974; randomized complete block design with 4 replications; 10 by 20 ft plots with 4 soybean rows; Mattapex silt loam, 1.5% organic matter
EFFECTS: Minor vigor reduction and stand reduction of soybeans at 0.5 lb/A, serious vigor and stand reduction at 0.67 lb/A; good foxtail control, satisfactory nutsedge control
REFERENCE: Parochetti, J.V., "Weed Control in Soybeans with Metribuzin and Combinations with Other Herbicides," Proc. Northeast. Weed Sci. Soc. 29:28-35 (1975).

<4903>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Grasses; Broadleaf weeds; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.33, 0.50, and 0.67 lb/A
APPLICATION METHODS: Preplant incorporated spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 10 locations in Iowa
EFFECTS: At 0.5 lb/A, moderate control of weeds with slight growth reduction of soybean
COMMENTS: Preplant incorporated herbicides trifluralin, dinitramine, profluralin, alachlor, and vernolate effectively reduced grassy weed populations; tank mix addition of metribuzin and bifenox broadened the spectrum of weeds controlled; overlay treatments of metribuzin were also equally effective in broadening the spectrum of weed control; preemergence treatments provided excellent examples of grass and broadleaf weed control in soybeans
REFERENCE: Jennings, V.M., "Soybean Herbicide Evaluations Across Iowa in 1974," Proc. North Cent. Weed Control Conf. 29:79-83 (1974).

<4904>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: USB-3584
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 micro M to 1.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplast and mung bean hypocotyl assays; evaluation time--up to 3 hr
EFFECTS: Strong inhibition of one or more cyclic or noncyclic photophosphorylation reactions, mitochondrial oxidation of varied substrates, and ATPase activity
COMMENTS: 2,6-dinitroanilines inhibited both electron transport and phosphorylation in isolated chloroplasts and mitochondria; interference with photoproduction of ATP chloroplasts evidenced by increased sensitivity of photophosphorylation over the coupled photoreduction to the 2,6-dinitroanilines when water served as electron donor, and by inhibition of photophosphorylation mediated by PMS in an argon atmosphere
REFERENCE: Moreland, D.E., F.S. Farmer, and G.G. Hussey, "Inhibition of Photosynthesis and Respiration by Substituted 2,6-Dinitroaniline Herbicides," Pest. Biochem. & Phys. 1:342-353 (1971).

<4905>
<4905>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Plants; Bean, snap (PHASEOLUS VULGARIS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 0.33, 0.25, and 0.67 lb/A
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Effective control of weeds but slight-moderate injury of snapbeans and lima beans
COMMENTS: Profluralin safest on snapbeans and fluchloralin safest on lima beans of herbicides evaluated
REFERENCE: Ilnicki, R.D., D.J. Herman, and J. Somody, "Effects of Some Preplant Incorporated Herbicides on Weed Control in Snapbeans and Lima Beans," Proc. Northeast. Weed Sci. Soc. 29:197-198 (1975).

<4906>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Broadleaf weeds; Grasses; Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.50, 0.56, and 1.0 kg/ha
APPLICATION METHODS: Preplant, preplant incorporated (6-7.5 cm depth), preemergence, and postemergence sprays; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: In preplant incorporated application at 1.0 kg/ha, effective control of all weeds with no adverse effect on tomato yield
COMMENTS: In direct-seeded tomatoes, FMC 25213 showed promise for providing broad spectrum weed control; CGA 24705 and Hoe 23408 found selective for annual grasses; with transplanted tomatoes, oxidiazon preplant and Hercules 26905 preplant incorporated provided effective weed control in addition to compounds mentioned for seeded crop
REFERENCE: Henne, R.C., "New Compounds with Potential for Weed Control in Tomatoes," Proc. Northeast. Weed Sci. Soc. 31:207-214 (1977).

<4907>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Soybean (GLYCINE MAX); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Carpetweed (MOLLUGO VERTICILLATA); Chamomile, corn (ANTHEMIS ARVENSIS); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.33, 0.50, and 0.67 lb/A
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold sandy loam
EFFECTS: Effective control of pigweed and carpetweed, moderate control of chamomile, shepherd's purse and panicum with no adverse effect on soybean
COMMENTS: Most effective dinitroaniline herbicide was dinitroaniline which gave moderate to effective control of all weeds with no adverse effect on soybeans; vigor reduction by some herbicides did not affect yield
REFERENCE: Ilnicki, R.D., D.J. Herman and J. Somody, "The Response of Soybeans to Some Dinitroaniline Herbicides," Proc. Northeast. Weed Sci. Soc. 29:17-18 (1975).

<4908>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
PLANT: Broadleaf weeds; Grasses; Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: 2.24 and 4.50 kg/ha
APPLICATION METHODS: Preplant incorporated (7 cm depth); preemergence and postemergence sprays; 308 l./ha; combined treatments
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: In preemergence, moderate control of weeds with slight phytotoxicity to carrots; no adverse effect on carrot yield
COMMENTS: Combination treatment consisting of trifluralin preplant incorporated followed by a postemergence application of linuron provided season long weed control; carrots tolerated postemergence applications of Hoe 23408 which selectively controlled annual grass weeds; combination of Hoe 23408 plus linuron resulted in more rapid weed kill than with either material alone
REFERENCE: Henne, R.C., "Chemical Weed Control in Carrots," Proc. Northeast Weed Sci. Soc. 31:238-243 (1977).

<4909>
CHEMICAL NAME: 1,3-Benzenediamine, N(3),N(3)-diethyl-2,4-dinitro-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: Dinitramine
EXPERIMENTAL DOSE: 0.4 to 0.8 kg/ha; EC
APPLICATION METHODS: Preemergence spray (incorporated or not); 100 to 200 l./ha
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Control of numerous weeds with lack of effect on numerous crops
COMMENTS: Selective weed control obtained in cotton, soya beans, dry beans, snap beans, groundnuts, potatoes, carrots and sunflowers; temporary tolerance of 0.05 ppm established for residues in or on cotton seeds and soya beans; applications made for temporary tolerances in dry beans, snap beans and groundnuts; strong indications of selective weed control found in rutabagas, turnips, peas, lentils, safflower, fennel, seeded and transplanted chicory, flax, onion and transplanted rice, cabbage, tomatoes, peppers, tobacco, Brussels sprouts, and eggplant; tolerances not yet established for these crops
REFERENCE: Gunary, D., "Dinitramine (Cobex, USB 3584), a New Pre-Plant Herbicide," PANS 18(4):513-516 (1972).

<4910>
CHEMICAL NAME: 1,3-Benzenediamine, 2,4-dinitro-N(3), N(3)-dipropyl-6-(trifluoromethyl)-
CHEMICAL COMMON NAME: USB 3152
PLANT: Potato, sweet (IPOMEA sp.); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA); Pigweed, smooth (AMARANTHUS HYBRIDUS); Henbit (LAMIUM AMPLEXICAULE); Carpetweed (MOLLUGO VERTICILLATA)
EXPERIMENTAL DOSE: 0.5 and 0.75 lb/A
APPLICATION METHODS: Preplant incorporated treatment at 30 psi in 20 gpa water
EXPERIMENTAL CONDITIONS: Field studies; 4 rows 25 ft long in each plot; crop vigor and weed control assessed; chloramben and vernolate used as chemical checks
EFFECTS: Sweet potato plant vigor and yields significantly reduced compared to chemical checks; good weed control
REFERENCE: Brown, J.F. and H.D. Swingle, "Herbicide Evaluation in Vegetable Crops," Proc. South. Weed Sci. Soc. 30:168-175 (1977).

<4911>
CHEMICAL NAME: 1,3-Benzenediol
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 63, 49, 41, and 25% growth at 100, 200, 300, and 400 ppm
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<4912>
CHEMICAL NAME: 1,3-Dioxane, 2-ethyl-5-methyl-5-[(2-methylphenyl)methoxy]-, cis
CHEMICAL COMMON NAME: FMC-25213
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 1.5 and 3.0 lb/A; 4% EC
APPLICATION METHODS: Broadcast (G) with spreader; preemergence spray, 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; mature Kentucky bluegrass lawn; soils-sandy and loam; crabgrass seed sown on lawn just prior to applications
EFFECTS: No adverse effects on any grasses
COMMENTS: A-820, CG-10832, PPG-139 and RP-17623 gave good crabgrass control; April versus May application of several of preemergence types show that specific guidelines are needed to obtain efficient crabgrass control; goosegrass control fair to good for several chemicals, but all materials considered poor to unsatisfactory
REFERENCE: Engel, R.E., C.W. Bussey, and P. Catron, "Crabgrass and Goosegrass Control in Turfgrass with Several Preemerge Herbicides," Proc. Northeast. Weed Sci. Soc. 29:369-371 (1975).

<4913>
CHEMICAL NAME: 1,3-Dioxane, 2-ethyl-5-methyl-5-[(2-methylphenyl)methoxy]-, cis
CHEMICAL COMMON NAME: FMC-25213
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Tomato (LYCOPERSICON ESCULENTUM); Velvetleaf (ABUTILON THEOPHRASTI); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Preplant incorporation by cultivating to 9-10 cm depth; preemergence and postemergence applications also investigated; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; no cultivation except control; soil temperature--19 C; tomatoes direct-seeded or transplanted
EFFECTS: Effective control in transplant but not preplant application on broadleaf weeds; effective on grass in both applications; slight to severe tomato phytotoxicity
COMMENTS: Metribuzin, napropamide, and U-27,267 effectively controlled weeds in both tomato cultures while S-6044 promising in transplanted crop; metribuzin applied preemergence phytotoxic to seeded tomatoes; activated carbon effective in reducing metribuzin phytotoxicity
REFERENCE: Henne, R.C., "Weed Control in Direct-Seeded and Transplanted Tomatoes," Proc. Northeast. Weed Sci. Soc. 29:203-210 (1975).

<4914>
CHEMICAL NAME: 1,3-Dioxane, 2-ethyl-5-methyl-5-[(2-methylphenyl)methoxy]-, cis
CHEMICAL COMMON NAME: FMC 25213
PLANT: Potato (SOLANUM TUBEROSUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Preemergence, pre-plant incorporated, or postemergence sprays; 30 to 35 lb/sq in at 18 to 43 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Haven loam
EFFECTS: Preplant incorporated, 4.0 lb/A--moderate to effective weed control with no adverse effect on potato
COMMENTS: Outstanding treatments were CGA 24705 applied preemergence or pre-soil incorporated, maintaining 80% control or better for at least three months; results excellent also with EPTC, alachlor, napropamide, and FMC 25213; several herbicides in combination also effective
REFERENCE: Selleck, G.W. and L.E. Weber, "Herbicide Trials for Yellow Nutsedge in Potatoes on Long Island," Proc. NE Weed Sci. Soc. 30:239-242 (1976).

<4915>
<4915>
CHEMICAL NAME: 1,3-Dioxane, 2-ethyl-5-methyl-5-[(2-methylphenyl)methoxy]-, cis
CHEMICAL COMMON NAME: FMC-25213
PLANT: Broadleaf weeds; Grasses; Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Preplant, preplant incorporated (6-7.5 cm depth), preemergence, and postemergence sprays; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: In preplant application, effective control of grasses and moderate control of broadleafs with possible adverse effect on tomato yield; slightly less effective weed control in preemergence application
COMMENTS: In direct-seeded tomatoes, FMC 25213 showed promise for providing broad spectrum weed control; CGA 24705 and Hoe 23408 found selective for annual grasses; with transplanted tomatoes, oxidiazon preplant and Hercules 26905 preplant incorporated provided effective weed control in addition to compounds mentioned for seeded crop
REFERENCE: Henne, R.C., "New Compounds with Potential for Weed Control in Tomatoes," Proc. Northeast. Weed Sci. Soc. 31:207-214 (1977).

<4916>
CHEMICAL NAME: 1,3-Dioxolane, 4-[[(2,6-dichlorophenyl) methoxy]methyl]-4-ethyl-2,2-dimethyl-
CHEMICAL COMMON NAME: WL 29226
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Wheat (TRITICUM AESTIVUM); Chickweed, common (STELLARIA MEDIA); Poppy, corn (PAPAVER RHOEAS); Knotweed (POLYGONUM AVICULARE); Goosegrass (GALIUM APARINE); (APHANES ARVENSIS); Scorpiongrass (MYOSOTIS ARVENSIS); Spurrey, corn (SPERGULA ARVENSIS); Pansy (VIOLA TRICOLOR); Bird's eye (VERONICA PERSICA); Speedwell, ivy-leaf (VERONICA HEDERIFOLIA); (MATRICARIA RECUTITA); Crunchweed (SINAPIS ARVENSIS); Radish, wild (RAPHANUS RAPHANISTRUM)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 kg/ha
APPLICATION METHODS: Preemergence; 400 g/l. EC
EXPERIMENTAL CONDITIONS: 38 field trials in wheat
EFFECTS: Good A. MYOSUROIDES control at 1.0 and 2.0 kg/ha, results more consistent at 2.0 kg/ha; good control of all other weeds at 2.0 kg/ha; good control of all but P. AVICULARE and G. APARINE at 1.0 kg/ha; M. ARVENSIS completely controlled at 0.5, 1.0, and 2.0 kg/ha; wheat yields greater than untreated controls
COMMENTS: Proposed common name, benzgylcereth; A. MYOSUROIDES control determined for varying clay and organic matter content of soils
REFERENCE: Kirby, P. and R.G. Turner, "WL 29226-A New Selective Herbicide for Use in Cereals," Proc. Brit. Weed Control Conf. 12(2):817-824 (1974).

<4917>
CHEMICAL NAME: 1,3-Dioxolane, 4-[[(2,6-dichlorophenyl) methoxy]methyl]-4-ethyl-2,2-dimethyl-
CHEMICAL COMMON NAME: WL 29226
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 0.245, 0.49, 0.98, and 1.96 kg/ha
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Ryegrass tolerance tests; logarithmic treatments of 1/2, 1/4, and 1/8 of starting dose (1.96 kg/ha)
EFFECTS: Minor sensitivity especially at 1.96 kg/ha
REFERENCE: Mead, H., B.L. Ross, and R.J. Finch, "Preliminary Investigations on the Control of Wild-Oat (AVENA FATUA L.) Cultivated Oak (AVENA SATIVA L.) and Blackgrass (ALOPECURUS MYOSUROIDES HUDS.) in Seed Crops of Various Varieties of Perennial and Italian Ryegrass," Proc. Brit. Weed Control Conf. 12(2):707-714 (1974).

<4918>
CHEMICAL NAME: 1,3-Dithiolane-2-carboxaldehyde, 2-methyl-, O-[(methylamino)carbonyl]oxime
CHEMICAL COMMON NAME: MBR-5667
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 to 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight to moderate leaf damage with no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<4919>
CHEMICAL NAME: 1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O-[(methylamino)carbonyl]oxime
CHEMICAL COMMON NAME: MBR-6168
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 to 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight to moderate leaf damage with no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<4920>
CHEMICAL NAME: 1,3-Dithiolo[4,5-b]quinoxalin-2-one, 6-methyl
CHEMICAL COMMON NAME: Quinomethionate
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 1 lb/100 gal
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test 2 applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first test screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to all but maranta
COMMENTS: 25% WP formulation; trade name Morestan; rated very unsfe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<4921>
CHEMICAL NAME: 1,3-Dithiolo[4,5-b]quinoxalin-2-one, 6-methyl
CHEMICAL COMMON NAME: Quinomethionate
PLANT: Schefflera (BRASSAIA ACTINOPHYLLA); Palm, neanthe bella (CHAMAEDOREA ELEGANS); Dieffenbachia (DIEFFENBACHIA PICTA); Gardenia (GARDENIA JASMINOIDES); Maranta (MARANTA LEUCONEURA)
EXPERIMENTAL DOSE: 1 lb/100 gal--based upon concentration of formulation per 100 gal water
APPLICATION METHODS: Weekly spray treatments with hand sprayer; test 1 applications began 4-29-71, ended 6-3-71; test applications began 7-15-71, ended 8-12-71
EXPERIMENTAL CONDITIONS: Two tests--first screened unsafe miticides; 4 pots of each plant species comprised a plot, 2 plots randomly arranged constituted a treatment; sprays applied to both leaf surfaces in morning between 7:30-10:30
EFFECTS: Foliage injury to all but maranta
COMMENTS: 25% WP formulation; trade name Morestan; rated very unsafe, no second test
REFERENCE: Knauss, J.F., "The Phytotoxicity of Seventeen Miticides Applied as Repeated Weekly Sprays Under Slat Shed Conditions to Five Foliage Plant Species," Proc. Fla. State Hort. Soc. 84:428-432 (1971).

<4922>
CHEMICAL NAME: 1,3-Dithiolo[4,5-b]quinoxalin-2-one, 6-methyl-
CHEMICAL COMMON NAME: Morestan
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Little or no adverse effect on germination or seedlings but some chromosome fragmentation
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<4923>
CHEMICAL NAME: 1,3-Dithiolo[4,5-b]quinoxalin-2-one, 6-methyl-
CHEMICAL COMMON NAME: Quinomethionate
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% WP formulation of quinomethionate (Morestan)
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No effect on growth; foliar injury (necrosis, crinkling and distortion) at 0.25 and 0.125% concentration
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<4924>
CHEMICAL NAME: 1,3,2-Benzodioxaphosphorin, 2-chlorohexahydro-4-methyl-4H-, 2-sulfide
CHEMICAL COMMON NAME: UC-8305
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 50% WP formulation and 4 lb/gal technical UC 8305 EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No effect on growth; 0.25% emulsion and 0.25 and 0.125% WP caused necrotic spots in center and along edges of leaves--damage not very serious
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<4925>
<4925>
CHEMICAL NAME: 1,3,4-Metheno-1H-cyclobuta[cd]-pentalene, 1,1a,2,2,3,3a,4,5,5,5a,5b,6-dodecachlorooctahydro-
CHEMICAL COMMON NAME: Mirex
PLANT: Clover, alsike (TRIFOLIUM HYBRIDUM); Fescue, tall (FESTUCA ARUNDINACEA); Clover, crimson (TRIFOLIUM INCARNATUM); Johnson grass (SORGHUM HALEPENSE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 0.15, 0.30, 0.70, 3.5, 7.5, 12.0, and 20.0 ppm
APPLICATION METHODS: Mirex concentrations prepared from stock solution of recrystallized technical mirex dissolved in acetone then diluted with water
EXPERIMENTAL CONDITIONS: Germination tests--seeds germinated under constant temperature (25 C), 4 replicates of 50 seeds each for each species planted on germination blotters; emergence and seedling growth tests--sand filled aluminum germination trays, 400 seeds of each crop planted in 4 replicates, emergence counts at day 4 to day 20 after planting
EFFECTS: Crimson clover and johnson grass showed significant germination and emergence decrease at 0.30 to 20.0 ppm; significantly decreased germination and emergence in rye grass at 0.70 to 20.0 ppm; alsike clover and alfalfa germination and emergence significantly decreased at all rates; significantly reduced germination of fescue at all rates, reduced emergence at all but 0.15 ppm
COMMENTS: Mirex first used in field for fire ant (SOLENOPSIS SAEVISIMA) control; test concentrations higher than normal field application; effect on dry weight of plant also reported
REFERENCE: Rajanna, B. and A.A. de la Cruz, "Mirex Incorporation in the Environment: Phytotoxicity on Germination, Emergence, and Early Growth of Crop Seedlings," Bull. Environ. Contam. Toxicol. 14(1):77-82 (1975).

<4926>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy) phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: RP-17623
PLANT: Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA LUTESCENS); Foxtail, green (SETARIA VIRIDIS); Sunflower (HELIANTHUS ANNUUS); Velvetleaf (ABUTILON THEOPHRASTI); Venice mallow (HIBISCUS TRIONUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed (AMARANTHUS sp.); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Preemergence treatments; 1.5 gal capacity plot sprayer regulated to apply 30 gal per acre
EXPERIMENTAL CONDITIONS: Test compound mixed with water to make 1 gal of spray solution; 3 replicates; randomized complete block design; 4 to 5 rows wide by 40 ft long; multiple test locations
EFFECTS: No soybean injury reported; 74% grass control; 92% broadleaf control
COMMENTS: Foxtails--grasses; other weeds--broadleaf; combinations of herbicides also tested
REFERENCE: Seim, A.L. and V.M. Jennings, "Soybean Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:54-58 (1975).

<4927>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: RP-17623
PLANT: Plants; Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Posttransplant (same day); granular formulation
EXPERIMENTAL CONDITIONS: Field study; evaluation time--aprox. 3 mos
EFFECTS: Effective weed control with no adverse effect on chrysanthemum yield at 1.0 lb/A
COMMENTS: Excellent weed control obtained with number of herbicides; only R-7465 and diphenamid used as soil surface treatments and bensulide gave unsatisfacotry control; various herbicide treatments found to affect growth of chrysanthemum plants to different degrees
REFERENCE: Welker, W.V. and J.C. Cialone, "An Evaluation of Herbicides for the Control of Weeds in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 26:51-54 (1972).

<4928>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Purslane, common (PORTULACA OLERACEA); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1.0, 1.5, 2, and 3 lb/A
APPLICATION METHODS: Formulation -- 75% WP and 2% G; sprays applied in 50 gallon solution per acre; granules applied with auger feed applicator calibrated for each treatment; postplanting application
EXPERIMENTAL CONDITIONS: Chrysanthemums commercially grown two seasons on gravelly sandy loam; roots dipped in activated carbon to reduce herbicide injury to chrysanthemums
EFFECTS: 1 lb/A wettable powder controlled weeds for one month, during first growing season without chrysanthemum injury; same dosage on established chrysanthemums caused moderate stunting; second growing season, granular 1.5 lb/A controlled purslane with only minor chrysanthemum injury; second growing season, 3 lb/A granular application reduced growth and delayed flowering of chrysanthemums
COMMENTS: During first growing season, flooding affected herbicide incorporation and chrysanthemum growth; no treatment controlled weeds all season without injury to chrysanthemums; use of multiple applications not thoroughly investigated; suggestions given for sequential herbicide use
REFERENCE: Ahrens, J.F., "Weed Control in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 28:386-394(1974).

<4929>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Thornapple (DATURA STRAMONIUM)
EXPERIMENTAL DOSE: 1, 2, 3, and 4 kg/ha
APPLICATION METHODS: Preemergence application
EXPERIMENTAL CONDITIONS: Glasshouse experiment --10-hr night, night temperature of 20 degrees C and day temperature of 30 degrees C; 15-cm pots containing brown clay loam, 6 soybean or cotton seeds per pot plus 100 thornapple seeds in each pot, cotton and soybean plants thinned to 3 plants; simulated spray and furrow irrigation; weeds counted 14, 33, and 47 days after herbicide application

<4929> CONT.
EFFECTS: 4 kg/ha gave 75% thornapple mortality with spray irrigation but less than 15% with furrow irrigation; 1 and 2 kg/ha did not give very effective control -- thornapple plants increased with time; soybean height reduced at 3 and 4 kg/ha, cotton height not affected; phytotoxic effects on both crops noted above 3 kg/ha but no description provided
COMMENTS: Study supports importance of soil moisture on herbicide activity -- surface moisture provides better oxadiazon activity; little potential for oxadiazon use in cotton or soybeans to control thornapple
REFERENCE: Felton, W.L., "Control of Datura Stramonium with Oxadiazon under Simulated Spray and Furrow Irrigation," Weed Res. 14(4):209-212 (1974).

<4930>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Junglerice (ECHINOCHLOA COLONUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 0.75 and 1.0 kg/ha
APPLICATION METHODS: Treatment 2 days after rice emergence; knapsack spray application of 670 dm(3)/ha
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; 3 x 5 m plots; visual toxicity and weed control ratings
EFFECTS: C. ROTUNDUS and R. EXALTATA resistant; L. CHINENSIS and E. COLONUM susceptible; minor toxicity to rice
COMMENTS: Good weed control but retardation of rice seedling growth and reduction in rice stand; effects on all weeds not specifically reported
REFERENCE: Aryeetey, A.N., "Chemical Weed Control in Rice in Ghana," Ghana J. Agric. Sci. 6:199-204 (1973).

<4931>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: RP-17623
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 1.68 and 2.24 kg/ha
APPLICATION METHODS: Preemergence spray; 188 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy loam or Cecil clay loam; time period--1969 to 1971
EFFECTS: Effective control of grasses and moderate control of broadleaf weeds with very slight damage to sunflower
COMMENTS: Alachlor applied in combination with either chlorpropham or prometryne satisfactorily controlled grasses and broadleaf weeds in sunflowers planted in April and June from 1969 through 1971; higher percentage of broadleaf weeds controlled with herbicides applied preemergence to sunflowers planted in April than when applied to sunflowers planted in June.
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Preplant or Preemergence on Weeds and Sunflowers," Crop Sci. 12(1):650-653 (1972).

<4932>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: RP-17623
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 0.56, 1.12, and 1.68 kg/ha
APPLICATION METHODS: Postemergence (early and late) spray; 188 l./ha (early) and 235 l./ha (late, directed spray); X-77 surfactant (0.5%)
EXPERIMENTAL CONDITIONS: Field study; soil-Cecil sandy clay loam; time period--1969 to 1971
EFFECTS: At varied stages of plant development, effective control of grasses and moderate control of broadleaf weeds with no adverse effect on sunflower yield
COMMENTS: Excellent grass control and poor broadleaf weed control obtained from early postemergence treatments of RP 17623 when applied as over-the-top spray at either cotyledon or first-leaf stage of sunflower growth; weed control results similar to RP 17623 from several herbicides applied as late-directed postemergence sprays; early postmergence treatments with RP 17623 caused some early injury to sunflower plants and reduction in achene oil percent when compared with achenes from untreated plants, but achene yields not reduced
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Postemergence on Weeds and Sunflowers," Crop Sci. 12(1):695-697 (1972).

<4933>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: RP-17623
PLANT: Grasses; Broadleaf weeds; Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 13 locations in Iowa
EFFECTS: Effective weed control with slight growth depression of soybean
COMMENTS: Dinitroaniline chemicals applied at proper rates for organic matter levels present provided good to excellent grass control; rate probably more critical for organic matter on BAS-3901, CG-10832 and dinitramine than for trifluralin; organic matter exceedingly critical for nitraline; vernolate provided good grass control and at most locations, better broadleaf control than dinitroaniline chemicals; preplant incorporated plus overlay treatment can increase broadleaf and overall weed control and usually result in less phototoxicity to the crop
REFERENCE: Jennings, V.M., D.W. Staniforth, and W.G. Lovely, "Soybean Herbicide Evaluations Across Iowa in 1973," Proc. N. Cent. Weed Contr. Conf. 28:42-45 (1973).

<4934>
<4934>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: RP-17623
PLANT: Soybean (GLYCINE MAX); Sesbania, hemp (SESBANIA EXALTATA); Mexicanweed (CAPERONIA CASTANAEFOLIA); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 1.12 and 3.36 kg/ha
APPLICATION METHODS: Preemergence spray; 2.0 m swath
EXPERIMENTAL CONDITIONS: Field study; soil--heavy clay; evaluation time--2 or 6 wk
EFFECTS: Very slight damage to soybean and slight to moderate control of weeds
COMMENTS: Linuron or metribuzin resulted in good control of hemp sesbania and mexicanweed; no preemergence herbicide tested gave good morningglory control, but metribuzin and RP-17623 resulted in fair control
REFERENCE: Eastin, E.F., "Control of Problem Weeds in Texas Soybeans," Proc. South. Weed Sci. Soc. 26:67-73 (1973).

<4935>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Plants; Stonecrop (SEDUM BREVIFOLIUM); (DELASPERMA ALBA); Ivy, Algerian (HEDERA sp.); (OSTEOSPERMUM FRUT.); Iceplant (CARPOBROTUS EDULE); Periwinkle, large (VINCA MAJOR)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil-sandy loam; evaluation times--1, 2, 6, and 9 mos
EFFECTS: Effective weed control at 4.0 lb/A over 9 mo period with moderate damage to S. BREVIFOLIUM and D. ALBA and slight damage to other ground cover plants
COMMENTS: Use of herbicides significantly less expensive than hand weeding; all herbicide treated plots of iceplant had greater fresh weight and rooting than non-weeded controls; oxadiazon, oryzalin, and nitrofen + nitralin appeared most effective
REFERENCE: Elmore, C.L. and W.A. Humphery, "Preemergence Weed Control in Ground Cover Ornamentals," Proc. West. Soc. Weed. Sci. 27:62-65 (1974).

<4936>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: RP-17623
PLANT: Grasses; Broadleaf weeds; Carpetgrass (AXONOPUS AFFINIS)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Preplant spray with soil incorporation by rototilling; preemergence spray; postemergence spray; combined herbicides and types of application; 190 to 280 l./ha; 0.5% surfactants in postemergence sprays
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy loam or Cecil sandy clay loam; time period--1969 to 1971; evaluation time--3 to 9 weeks
EFFECTS: Moderate control of grass weeds and slight control of broadleafs with slight damage to soybean in postemergence application; one cultivation improved weed control to effective status and reduced sunflower damage
COMMENTS: Control of grasses and broadleaf weeds in sunflowers generally as good with one or two cultivations during 3-year period as with chemicals applied alone or in sequence with cultivation; plant injury was not evident from mechanical treatments or from trifluralin
REFERENCE: Johnson, B.J., "Weed Control Systems for Sunflowers," Weed Sci. 20(3):261-264 (1972).

<4937>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Bahiagrass (PASPALUM NOTATUM)
EXPERIMENTAL DOSE: 8.0 lb/A
APPLICATION METHODS: Postemergence spray; 37-50 gal/A
EXPERIMENTAL CONDITIONS: Field study; 3 locations (FL); time period--1971 and 1972; evaluation time--8 to 26 wks
EFFECTS: Moderate to effective control of bahiagrass
COMMENTS: Combinations of diuron or simazine plus 2 applications of dalapon, 2 applications of dalapon alone or single applications of glyphosate provided best grass control; in addition, bahiagrass controlled with oxadiazon and asulam
REFERENCE: Arnold, C.E. and J.B. Aitken, "Perennial Grass Control in Pecan Orchards," Proc. South. Weed Sci. Soc. 26:231-235 (1973).

<4938>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: RP-17623
PLANT: Chamise (ADENOSTOMA FASCICULATUM); Junglerice (ECHINOCHLOA COLONUM); Spangletop, bearded (LEPTOCHLOA FASCICULARIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Crabgrass, large (DIGITARIA SANGUINALIS); Signalgrass, broad-leaf (BRACHIARIA PLATYPHYLLA); Nutsedge (CYPERUS sp.); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preemergence; back pack air pressurized sprayer at 17 psi and 15 gpa; 2 lb/gal formulation
EXPERIMENTAL CONDITIONS: 4 Texas test locations; spring planting; sandy and clay loams; 10 by 90 ft area at each location treated, two 50 sq ft sample areas from the large area selected at random for weed control and yield data; rice either drill seeded or aerial dry seeded
EFFECTS: Complete control of spangletop and junglerice except at location 3; good control of barnyardgrass, fall panicum, and dayflower except at location 3; poor control of sedges; poor control of signalgrass and crabgrass but only evaluation site was location 3; rice response--variation from delayed heading to no

<4938> CONT.
injury
COMMENTS: Dry soil at location 3, chemicals were weather liable; only effective preemergence when followed by irrigation or when applied to wet surface
REFERENCE: Palmer, R.D., "Rice Weed Control in the Texas Western Belt," Proc. South. Weed Sci. Soc. 26:146-154 (1973).

<4939>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Bluegrass, annual (POA ANNUA); Parsley-piert (ALCHEMILLA MICROCORPA); Speedwell, corn (VERONICA ARVENSIS); Clover, hop (TRIFOLIUM AGARIUM); Bermudagrass, common (CYNODON DACTYLON); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 3.4 and 4.5 kg/ha
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: 3-year test on golf courses, 1-year test at Georgia Experiment Station; loam, sandy clay loam, and sandy loam soils; DCPA, benefin, terbutol, bensulide used as summer chemical checks, pronamide, DCPA, and terbutol used as winter chemical checks; 1.5 by 3.0 m plots, randomized complete block design with 4 replications; summer tests--crabgrass control in turfgrass; winter tests--control of annual bluegrass, parsley-piert, corn speedwell and hop clover; visual ratings
EFFECTS: Crabgrass control--90% avg. for 11 tests at 3.4 kg/ha, 91% avg. for 11 tests at 4.5 kg/ha; annual bluegrass control--3 years, 94, 98, and 88% at 3.4 kg/ha, 95, 96, and 98% at 4.5 kg/ha; parsley-piert control--3 years, 88, 100, and 100% at 3.4 kg/ha, 94, 100, and 100% at 4.5 kg/ha; corn speedwell control--100, 95, and 73% at 3.4 kg/ha, 99, 89, and 76% at 4.5 kg/ha; hop clover control--2 years, 100 and 73% at 3.4 kg/ha, 100 and 83% at 4.5 kg/ha; no significant effect on Kentucky bluegrass and bermudagrass
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<4940>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Ash, green (FRAXINUS PENNSYLVANICA); Poplar, yellow (LIRIODENDRON TULIPIFERA); Walnut, black (JUGLANS NIGRA); Pine, white (PINUS STROBUS); Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 2.0 and 4.0 kg/ha; 2% EC
APPLICATION METHODS: Posttransplant spray; 29 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Poss-Geneco complex
EFFECTS: Good to excellent survival with apparent growth stimulation in most cases
COMMENTS: Oxadiazon, napropamide and simazine produced very favorable results at low rates; simazine only injurious to green ash; diphenamid and DCPA effective without incorporation only at extremely high rates; tolerance range for Velpar and RP-23465 for use on newly planted seedlings appear very small; bifenox as used did not appear to be detrimental to seedlings
REFERENCE: Wiltrout, T.R. and H.A. Holt, "Prospects of Controlling Vegetation in New Forest Plantations," Proc. N. Cent. Weed Control Conf. 30:31-36 (1975).

<4941>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Peanut (ARACHIS HYPOGAEA); Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 1.68 kg/ha
APPLICATION METHODS: Preplanting incorporated and preemergence treatments in spray volume of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: 90% weed control 25 days after treatment and 24 days after planting; 96% weed control 72 days after planting; 28% crop injury at 24 days and no injury at 72 days after planting
COMMENTS: Crop injury only temporary
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<4942>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: RP-17623
PLANT: Alfalfa (MEDICAGO SATIVA); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Preemergence treatments; April application
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Severe reduction of alfalfa and crownvetch stands; effective broadleaf weed control
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<4943>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: RP-17623
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 3.0 lb/A; 2% G
APPLICATION METHODS: Broadcast (G) with spreader; preemergence spray, 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; mature Kentucky bluegrass lawn; soils-sandy and loam; crabgrass seed sown on lawn just prior to applications
EFFECTS: Effective control of grass weeds but moderate injury of turf grass
COMMENTS: A-820, CG-10832, PPG-139 and RP-17623 gave good crabgrass control; April versus May application of

<4943>
<4943> CONT.
several of preemergence types show that specific guidelines are needed to obtain efficient crabgrass control; goosegrass control fair to good for several chemicals, but all materials considered poor to unsatisfactory
REFERENCE: Engel, R.E., C.W. Bussey, and P. Catron, "Crabgrass and Goosegrass Control in Turfgrass with Several Preemerge Herbicides," Proc. Northeast. Weed Sci. Soc. 29:369-371 (1975).

<4944>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Broadleaf weeds; Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Potato (SOLANUM TUBEROSUM)
EXPERIMENTAL DOSE: 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preplant and preemergence sprays; 80 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Effective control of broadleafs and quackgrass at all rates but slight to moderate control of barnyard grass with no adverse effect on potato yield
COMMENTS: Most herbicides somewhat ineffective for annual grass control; S-6044, MBB20035, and oxadiazolin all ineffective for control of annual grasses; combinations of oryzalin with metribuzin, methazole, and linuron also provided good broadleaved weed and quackgrass control; oryzalin alone not effective for annual grass or quackgrass control
REFERENCE: Murphy, H.J. and M.J. Goven, "Weed Control in White Potatoes in Maine - 1973," Proc. Northeast. Weed Sci. Soc. 28:287-295 (1974).

<4945>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Junglerice (ECHINOCHLOA COLONUM); Spangletop, bearded, (LEPTOCHLOA FASCICULARIS); Nutsedge, yellow (CYPERUS ESCULENTUS); Rice (ORYZA SATIVA); Dayflower, spreading (COMMELINA DIFFUSA); Ammannia, purple (AMMANNIA COCCINEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Flatsedge, rice field (CYPERUS IRIA); Arrowhead (SAGGITARIA sp.)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Preemergence spray; 9.8 l./ha at 1.23 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; 4 locations in Texas; ricefield flooding (when applicable) after treatment; soil--Edna clay loam, Edna sandy loam, and Katy sandy loam
EFFECTS: Moderate to effective control of junglerice, spangletop, and nutsedge with little or no control of remaining weeds and slight damage to rice
COMMENTS: IMC 3950 either preemergence or early post as a tank mixture with propanil controlled bearded sprangletop and junglerice, chlorpropham plus propanil showed promise for control of bearded sprangletop; oxadiazon and bifenox controlled bearded sprangletop as preemergence treatments; bifenox plus oxadiazon appeared to be best tank mix for control of several species
REFERENCE: Palmer, R.D. and C.W. Helpert, "Rice Weed Control in the Western Belt of Texas," Proc. S. Weed Sci. Soc. 27:127-135 (1974).

<4946>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: RP-17623
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 1 and 4 kg/ha
APPLICATION METHODS: Postemergence spray at volume rate of 352 l./ha and pressure of 2.1 kg/cm (2); 25% EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse study; test 1 plants grown in soil medium; test 2 and 3 plants grown in sand; 2 replications; tests 2 and 3 had foliage spray and surface solution application experiments; visual assessments made and dry weights determined
EFFECTS: Necrotic spots on youngest expanded leaves quickly developed; 1 or 2 exposed leaves died; normal regrowth; no significant reduction in dry weight compared to control
REFERENCE: Clay, D.V., "The Response of Strawberry to a Range of Foliage Acting Herbicides," Proc. Brit. Weed Control Conf. 11:409-416 (1972).

<4947>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Pigweed (AMARANTHUS sp.); Purslane, common (PORTULACA OLERACEA); Santa Maria (PARTHENIUM HYSTEROPHORUS); (PHYLLANTHUS AMARUS); Wiregrass (ELEUSINE INDICA); Junglerice (ECHINOCHLOA COLONUM); Crabgrass (DIGITARIA INSULARIS); Nutsedge, purple (CYPERUS ROTUNDUS); Groundnut (PANAX TRIFOLIUM); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 1 and 2 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Loam soil; non-field experiments
EFFECTS: Crops in which safe at 1 kg/ha--groundnut, soybean, cotton, and sunflower; crops in which safe at 2 kg/ha--groundnut and soybean; crops in which unsafe at 2 kg/ha--cotton and sunflower; weed control--moderate at 1 kg/ha, good at 2 kg/ha
COMMENTS: Promising herbicides from these studies tested in field
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<4948>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Onion (ALLIUM CEPA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Panicum, fall (PANICUM DICHOTOMIFLORUM); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preemergence followed by postemergence (sequential application)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: Severe stunting and yield reduction of onion with moderate to effective weed control
COMMENTS: Only oxidiazon applied as postemergence treatment on two-leaf and four-leaf onions resulted in yields comparable to the hand weeded check; injury to two-leaf onions was serious with lowest rates of oxidiazon, methazole, and phenmedipham
REFERENCE: Grande, J.A., "Pre-Post Herbicide Combination Studies in Direct Seeded Onions," Proc. N.E. Weed Sci. Soc. 30:185-189 (1976).

<4949>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Ronstar
PLANT: Speedwell, creeping (VERONICA FILIFORMIS); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 3.0 lb/A; 2% G
APPLICATION METHODS: Broadcast
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No control of VERONICA and moderate damage of turfgrass
COMMENTS: Non-selective control achieved with glyphosate; selective control achieved with DCPA and RO7-6145; Ronstar not effective in controlling VERONICA FILIFORMIS
REFERENCE: Kaufmann, J.E., "Chemical Control of VERONICA FILIFORMIS in Turf," Proc. N.E. Weed Sci. Soc. 30:340-343 (1976).

<4950>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Purslane, common (PORTULACA OLERACEA); Chickweed, mouse-ear (CERASTIUM VISCOSUM); Galinsoga (GALINSOGA CILIATA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Mustard, wild (BRASSICA KABER); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Pineappleweed (MATRICARIA MATRICARIOIDES); Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 0.75 to 1.00 lb/A
APPLICATION METHODS: Preemergence spray; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; 11 onion varieties studied in direct-seeding culture
EFFECTS: Effective weed control with kill of onion at all rates
COMMENTS: Best combination of weed control, selectivity, and yield response occurred with standard CDAA treatment at cracking plus 2 applications of nitrofen postemergence; oxadiazon and Bay NTN 6867 effective for at least 8 weeks in controlling weeds; oxadiazon phytotoxic to onions at ground crack stage but selectivity markedly improved with postemergence applications; yield data indicated that Bay NTN 6867 significantly reduced yield in all but one variety
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicide Trials for Direct Seeded Onions on Long Island, 1975," Proc. NE Weed Sci. Soc. 30:181-184 (1976).

<4951>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: RP-17623
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 2.0, 3.0, and 4.0 lb/A; G and WP
APPLICATION METHODS: Preemergence broadcast spreader (G) and spray (WP); 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; established turf with seeding of crabgrass prior to herbicide applications
EFFECTS: Effective control of weed grasses at 3.0 and 4.0 lb/A with slight to moderate thinning of turf grasses
COMMENTS: A-820, CGA-10832, and RP-17623 experimental herbicides useful new preemergence herbicides in comparison with commercially available herbicides; two new aniline herbicides have some advantages
REFERENCE: Engel, R.E., C.W. Bussey, and R.D. Ilnicki, "Control of Crabgrass DIGITARIA Species and Goosegrass ELEUSINE INDICA in Turf with Experimental Preemergence Herbicides," Proc. Northeast. Weed Soc. 27:324-330 (1973).

<4952>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
CHEMICAL COMMON NAME: Oxadiazon
PLANT: Broadleaf weeds; Grasses; Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 1.0, 2.0, 2.2, and 3.0 kg/ha
APPLICATION METHODS: Preplant, preplant incorporated (6-7.5 cm depth), preemergence, and postemergence sprays; 308 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: In preplant application at all rates, moderate control of all weeds with no adverse effect on tomato yield
COMMENTS: In direct-seeded tomatoes, FMC 25213 showed promise for providing broad spectrum weed control; CGA 24705 and Hoe 23408 found selective for annual grasses; with transplanted tomatoes, oxidiazon preplant and Hercules 26905 preplant incorporated provided effective weed control in addition to compounds mentioned for seeded crop
REFERENCE: Henne, R.C., "New Compounds with Potential for Weed Control in Tomatoes," Proc. Northeast. Weed Sci. Soc. 31:207-214 (1977).

<4953>
<4953>
CHEMICAL NAME: 1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(2-propynyloxy)phenyl]-5-(1-methylethyl)-
CHEMICAL COMMON NAME: 20810 RP
PLANT: Pigweed (AMARANTHUS sp.); Purslane, common (PORTULACA OLERACEA); Santa Maria (PARTHENIUM HYSTEROPHORUS); (PHYLLANTHUS AMARUS); Wiregrass (ELEUSINE INDICA); Junglerice (ECHINOCHLOA COLONUM); Crabgrass (DIGITARIA INSULARIS); Nutsedge, purple (CYPERUS ROTUNDUS); Groundnut (PANAX TRIFOLIUM); Soybean (GLYCINE MAX); Sunflower (HELIANTHUS ANNUUS); Onion (ALLIUM CEPA); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.375 and 0.75 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Loam soil; non-field experiments
EFFECTS: Crops in which safe at 0.375 kg/ha--groundnut, soybean, sunflower, onion, and cotton; crops in which safe at 0.75 kg/ha --groundnut; crops in which unsafe at 0.75 kg/ha--soybean, sunflower, onions, and cotton; weed control--good at 0.75 kg/ha
COMMENTS: Promising herbicides from these studies tested in field
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<4954>
CHEMICAL NAME: 1,3,4-Oxadiazole, 2-[[(p-chlorophenyl)methyl]thio]-
CHEMICAL COMMON NAME: TH-2946
PLANT: Rice (LEERSIA ORYZOIDES); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Millet, Japanese (ECHINOCHLOA UTILIS)
EXPERIMENTAL DOSE: 3 X 10(-6), 23 X 10(-6), and 10 X 10(-6) M
APPLICATION METHODS: Germinated seeds placed in test solution
EXPERIMENTAL CONDITIONS: Test compound dissolved in acetone solution; seeds germinated, 10 rice and 20 of the 2 Echinochloa species placed separately into glass tubes; 2 ml of tests solution added; 6 days growth; concentrations reducing growth by 50% determined
EFFECTS: Growth reduced by 50% of rice, E. UTILIS, and E. CRUSGALLI at reported concentrations
COMMENTS: Concentrations represent rice, E. UTILIS, and E. CRUSGALLI exposures, respectively
REFERENCE: Hagimoto, H., H. Yoshikawa, and Y. Okada, "Herbicidal Activity of 2-(2-Chlorobenzylthio)-5-methyl-1,3,4-oxidiazole and the Related Compounds," J. Takeda Res. Lab. 33(1):38-42 (1974).

<4955>
CHEMICAL NAME: 1,3,4-Oxadiazole, 2-[[(2-bromophenyl)methyl]thio]-5-methyl-
PLANT: Rice (LEERSIA ORYZOIDES); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Millet, Japanese (ECHINOCHLOA UTILIS)
EXPERIMENTAL DOSE: 5x10(-6), 21x10(-6), and 19x10(-6) M
APPLICATION METHODS: Germinated seeds placed in test solution
EXPERIMENTAL CONDITIONS: Test compound dissolved in acetone solution; seeds germinated, 10 rice and 20 of the 2 Echinochloa species placed separately into glass tubes; 2 ml of test solution added; 6 days growth; concentrations reducing growth by 50% determined
EFFECTS: Growth reduced by 50% of rice, E. UTILIS, and E. CRUSGALLI at reported concentrations
COMMENTS: Concentrations represent rice, E. UTILIS, and E. CRUSGALLI exposures, respectively
REFERENCE: Hagimoto, H., H. Yoshikawa, and Y. Okada, "Herbicidal Activity of 2-(2-Chlorobenzylthio)-5-methyl-1,3,4-oxadiazole and the Related Compounds," J. Takeda Res. Lab. 33 (1):38-42 (1974).

<4956>
CHEMICAL NAME: 1,3,4-Oxadiazole, 2-[[(4-bromophenyl)methyl]thio]-5-methyl-
PLANT: Rice (LEERSIA ORYZOIDES); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Millet, Japanese (ECHINOCHLOA UTILIS)
EXPERIMENTAL DOSE: 23x10(-6), 21x10(-6), and 29x10(-6) M
APPLICATION METHODS: Germinated seeds placed in test solution
EXPERIMENTAL CONDITIONS: Test compound dissolved in acetone solution; seeds germinated, 10 rice and 20 of the 2 Echinochloa species placed separately into glass tubes; 2 ml of test solution added; 6 days growth; concentrations reducing growth by 50% determined
EFFECTS: Growth reduced by 50% of rice, E. UTILIS, and E. CRUSGALLI at reported concentrations
COMMENTS: Concentrations represent rice, E. UTILIS, and E. CRUSGALLI exposures, respectively
REFERENCE: Hagimoto, H., H. Yoshikawa, and Y. Okada, "Herbicidal Activity of 2-(2-Chlorobenzylthio)-5-methyl-1,3,4-oxadiazole and the Related Compounds," J. Takeda Res. Lab. 33 (1):38-42 (1974).

<4957>
CHEMICAL NAME: 1,3,4-Oxadiazole, 2-[[(4-chlorophenyl)methyl]thio]-5-methyl-
PLANT: Rice (LEERSIA ORYZOIDES); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Millet, Japanese (ECHINOCHLOA UTILIS)
EXPERIMENTAL DOSE: 22 X 10(-6), 21 X 10(-6), and 29 X 10(-6) M
APPLICATION METHODS: Germinated seeds placed in test solution
EXPERIMENTAL CONDITIONS: Test compound dissolved in acetone solution; seeds germinated, 10 rice and 20 of the 2 Echinochloa species placed separately into glass tubes; 2 ml of tests solution added; 6 days growth; concentrations reducing growth by 50% determined
EFFECTS: Growth reduced by 50% of rice, E. UTILIS, and E. CRUSGALLI at reported concentrations
COMMENTS: Concentrations represent rice, E. UTILIS, and E. CRUSGALLI exposures, respectively
REFERENCE: Hagimoto, H., H. Yoshikawa, and Y. Okada, "Herbicidal Activity of 2-(2-Chlorobenzylthio)-5-methyl-1,3,4-oxidiazole and the Related Compounds," J. Takeda Res. Lab. 33(1):38-42 (1974).

<4958>
CHEMICAL NAME: 1,3,4-Oxadiazole, 2-methyl-5-[[(2-methylphenyl)-methyl]thio]-
PLANT: Rice (LEERSIA ORYZOIDES); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Millet, Japanese (ECHINOCHLOA UTILIS)
EXPERIMENTAL DOSE: 8x10(-6), 16x10(-6), and 26x10(-6) M
APPLICATION METHODS: Germinated seeds placed in test solution
EXPERIMENTAL CONDITIONS: Test compound dissolved in acetone solution; seeds germinated, 10 rice and 20 of the 2 Echinochloa species placed separately into glass tubes; 2 ml of test solution added; 6 days growth; concentrations reducing growth by 50% determined
EFFECTS: Growth reduced by 50% of rice, E. UTILIS, and E. CRUSGALLI at reported concentrations
COMMENTS: Concentrations represent rice, E. UTILIS, and E. CRUSGALLI exposures, respectively
REFERENCE: Hagimoto, H., H. Yoshikawa, and Y. Okada, "Herbicidal Activity of 2-(2-Chlorobenzylthio)-5-methyl-1,3,4-oxadiazole and the Related Compounds," J. Takeda Res. Lab. 33 (1):38-42 (1974).

<4959>
CHEMICAL NAME: 1,3,4-Oxadiazole, 2-methyl-5-[[(2-nitrophenyl)-methyl]thio]-
PLANT: Rice (LEERSIA ORYZOIDES); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Millet, Japanese (ECHINOCHLOA UTILIS)
EXPERIMENTAL DOSE: 15x10(-6), 35x10(-6), and 49x10(-6) M
APPLICATION METHODS: Germinated seeds placed in test solution
EXPERIMENTAL CONDITIONS: Test compound dissolved in acetone solution; seeds germinated, 10 rice and 20 of the 2 Echinochloa species placed separately into glass tubes; 2 ml of test solution added; 6 days growth; concentrations reducing growth by 50% determined
EFFECTS: Growth reduced by 50% of rice, E. UTILIS, and E. CRUSGALLI at reported concentrations
COMMENTS: Concentrations represent rice, E. UTILIS, and E. CRUSGALLI exposures, respectively
REFERENCE: Hagimoto, H., H. Yoshikawa, and Y. Okada, "Herbicidal Activity of 2-(2-Chlorobenzylthio)-5-methyl-1,3,4-oxadiazole and the Related Compounds," J. Takeda Res. Lab. 33 (1):38-42 (1974).

<4960>
CHEMICAL NAME: 1,3,4-Oxadiazole, 2-methyl-5-[[(4-nitrophenyl)-methyl]thio]-
PLANT: Rice (LEERSIA ORYZOIDES); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Millet, Japanese (ECHINOCHLOA UTILIS)
EXPERIMENTAL DOSE: 247x10(-6), 275x10(-6), and 299x10(-6) M
APPLICATION METHODS: Germinated seeds placed in test solution
EXPERIMENTAL CONDITIONS: Test compound dissolved in acetone solution; seeds germinated, 10 rice and 20 of the 2 Echinochloa species placed separately into glass tubes; 2 ml of test solution added; 6 days growth; concentrations reducing growth by 50% determined
EFFECTS: Growth reduced by 50% of rice, E. UTILIS, and E. CRUSGALLI at reported concentrations
COMMENTS: Concentrations represent rice, E. UTILIS, and E. CRUSGALLI exposures, respectively
REFERENCE: Hagimoto, H., H. Yoshikawa, and Y. Okada, "Herbicidal Activity of 2-(2-Chlorobenzylthio)-5-methyl-1,3,4-oxadiazole and the Related Compounds," J. Takeda Res. Lab. 33 (1):38-42 (1974).

<4961>
CHEMICAL NAME: 1,3,4-Oxadiazole, 2-methyl-5[(phenylmethyl)-thio]-
PLANT: Rice (LEERSIA ORYZOIDES); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Millet, Japanese (ECHINOCHLOA UTILIS)
EXPERIMENTAL DOSE: 12 X 10(-6), 37 X 10(-6), and 26 X 10(-6) M
APPLICATION METHODS: Germinated seeds placed in test solution
EXPERIMENTAL CONDITIONS: Test compound dissolved in acetone solution; seeds germinated, 10 rice and 20 of the 2 Echinochloa species placed separately into glass tubes; 2 ml of tests solution added; 6 days growth; concentrations reducing growth by 50% determined
EFFECTS: Growth reduced by 50% of rice, E. UTILIS, and E. CRUSGALLI at reported concentrations
COMMENTS: Concentrations represent rice, E. UTILIS, and E. CRUSGALLI exposures, respectively
REFERENCE: Hagimoto, H., H. Yoshikawa, and Y. Okada, "Herbicidal Activity of 2-(2-Chlorobenzylthio)-5-methyl-1,3,4-oxidiazole and the Related Compounds," J. Takeda Res. Lab. 33(1):38-42 (1974).

<4962>
CHEMICAL NAME: 1,3,4-Oxadiazolin-5-one, 2-tert-butyl-4-(2,4-dichlorophenyl)-delta2-
CHEMICAL COMMON NAME: RP-15018
PLANT: Corn (ZEA MAYS); Nutsedge, yellow (CYPERUS ESCULENTUS); Foxtail, giant (SETARIA FABERI); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Mattapex silt loam; time period--1974 and 1975
EFFECTS: At 4.0 lb/A, moderate to effective weed control with slight initial corn damage but no adverse effect on yield
COMMENTS: Best control of weed species achieved with combination of materials; only RP-20630 and RP-15018, at high rates, caused corn injury and reduced yields
REFERENCE: Parochetti, J.V., G.W. Burt, and A.W. Bell, "Triazines, Acetanilides, and Several Other Herbicides for Weed Control in Corn," Proc. N.E. Weed Sci. Soc. 30:48-54 (1976).

<4963>
CHEMICAL NAME: 1,3,4-Oxidiazole, 2-methyl-5-[[(4-methylphenyl)-methyl]thio]-
PLANT: Rice (LEERSIA ORYZOIDES); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Millet, Japanese (ECHINOCHLOA UTILIS)
EXPERIMENTAL DOSE: 23x10(-6), 15x10(-6), and 26x10(-6) M
APPLICATION METHODS: Germinated seeds placed in test solution
EXPERIMENTAL CONDITIONS: Test compound dissolved in acetone solution; seeds germinated, 10 rice and 20 of the 2 Echinochloa species placed separately into glass tubes; 2 ml of test solution added; 6 days growth; concentrations reducing growth by 50% determined

<4963>
<4963> CONT.
EFFECTS: Growth reduced by 50% of rice, E. UTILIS, and E. CRUSGALLI at reported concentrations
COMMENTS: Concentrations represent rice, E. UTILIS, and E. CRUSGALLI exposures, respectively
REFERENCE: Hagimoto, H., H. Yoshikawa, and Y. Okada, "Herbicidal Activity of 2-(2-Chlorobenzylthio)-5-methyl-1,3,4-oxadiazole and the Related Compounds," J. Takeda Res. Lab. 33 (1):38-42 (1974).

<4964>
CHEMICAL NAME: 1,3,5-Benzenetriol
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 66, 43, 30, and 26% growth at 100, 200, 300, and 400 ppm, respectively
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<4965>
CHEMICAL NAME: 1,3,5-Thiadiazine-2-thione, tetrahydro-3,5-dimethyl-2H-
CHEMICAL COMMON NAME: DMTT
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 150 and 300 lb/A
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: At 150 lb/A, effective control of all weeds (one year) and slight-moderate damage of corn with no adverse effect on cotton and soybean; very slight control of weeds in 1958
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, Simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but fairly safe on corn, MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(iso-propylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<4966>
CHEMICAL NAME: 1,3,5-Thiadiazine-2-thione, tetrahydro-3,5-dimethyl-2H-
CHEMICAL COMMON NAME: Dazomet
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Weeds; Foxtail (SETARIA sp.); Crabgrass (DIGITARIA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Dandelion (TARAXACUM OFFICINALE); Purslane, common (PORTULACA OLERACEA); Pigweed, prostrate (AMARANTHUS GRAECIZANS); Medick, black (MEDICAGO LUPULINA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 0.4, 0.6, and 0.9 lb/100 sq ft
APPLICATION METHODS: Preplanting treatments in 10 gal water per 100 sq ft followed by 34 gal per 100 sq ft
EXPERIMENTAL CONDITIONS: June 12 applications, 5 replications; 3 X 8 ft plots; field study; 1956 and 1957 test years
EFFECTS: 1956--8.6 weeds/100 sq ft at 0.6 lb; 1957--7.3 and 1.3 weeds/6 sq ft at 0.4 and 0.9 lb, respectively; check--45.2 and 132.3 weeds/6 sq ft in 1956 and 1957, respectively; no indication of chrysanthemum injury
COMMENTS: Weed species considered together for tabulations; weed control rated highly significant
REFERENCE: Stadtherr, R.J. and R.E. Widmer, "Chemical Weed Control in Garden Chrysanthemums," Weeds 7(1):82-87 (1956).

<4967>
CHEMICAL NAME: 1,3,5-Thiadiazine-2-thione, tetrahydro-3,5-dimethyl-2H-
CHEMICAL COMMON NAME: Mylone
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 300 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No control
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<4968>
CHEMICAL NAME: 1,3,5-Thiadiazine-2-thione, tetrahydro-3,5-dimethyl-2H-
CHEMICAL COMMON NAME: N521
PLANT: Plants; Tobacco (NICOTIANA sp.)
EXPERIMENTAL DOSE: 1.0 lb/100 sq ft
APPLICATION METHODS: Application to soil (surface drench); 1.0 gal/sq yd
EXPERIMENTAL CONDITIONS: Field study; time period--1955 and 1956
EFFECTS: Effective weed control with no adverse effect on tobacco

<4968> CONT.
COMMENTS: Vapam, Mylone, and N521 used alone and in combination with calcium cyanamid gave effective weed and nematode control in tobacco plant beds; no stunting or other adverse effect on tobacco plants at two experimental plant bed locations; at one of three locations in cooperative trials, tobacco plants retarded following treatment with Vapam and N521; no apparent relation to physical conditions of the soil or to cropping history where stunting occurred; weed control good at two of three grower locations
REFERENCE: Graham, T.W., "Weed and Root Knot Control in Tobacco Plant Beds by Surface Drench and Other Treatments," Plant Disease Rept. 40(12):1041-1044 (1956).

<4969>
CHEMICAL NAME: 1,3,5-Thiadiazine-2-thione, tetrahydro-3,5-dimethyl-2H-
CHEMICAL COMMON NAME: Mylone
PLANT: Plants; Tobacco (NICOTIANA sp.)
EXPERIMENTAL DOSE: 1.0 lb/100 sq ft
APPLICATION METHODS: Application to soil (surface drench); 1.0 gal/sq yd
EXPERIMENTAL CONDITIONS: Field study; time period--1955 and 1956
EFFECTS: Effective weed control with no adverse effect on tobacco
COMMENTS: Vapam, Mylone, and N521 used alone and in combination with calcium cyanamid gave effective weed and nematode control in tobacco plant beds; no stunting or other adverse effect on tobacco plants at two experimental plant bed locations; at one of three locations in cooperative trials, tobacco plants retarded following treatment with Vapam and N521; no apparent relation to physical conditions of the soil or to cropping history where stunting occurred; weed control good at two of three grower locations
REFERENCE: Graham, T.W., "Weed and Root Knot Control in Tobacco Plant Beds by Surface Drench and Other Treatments," Plant Disease Rept. 40(12):1041-1044 (1956).

<4970>
CHEMICAL NAME: 1,3,5-Thiadiazine-2-thione, tetrahydro-3,5-dimethyl-2H-
CHEMICAL COMMON NAME: Dazomet
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 300 and 400 ppm
APPLICATION METHODS: 90% dust; preplanting soil treatments, 50 ml solution to each of 20 pots
EXPERIMENTAL CONDITIONS: Greenhouse tests at 80 to 85 F; soil inoculated with PHYTOPHTHORA PARASITICA var. NICOTIANAE (causes black shank); 5 randomized replicates of 4 pots each for each chemical rate; chemical added once during test; plantings made 4 days and 3 weeks after treatment; chloropicrin treated soils as controls
EFFECTS: Plants transplanted after 4 days to inoculated soil were stunted; plants normal when grown in 3-week old treated soil
COMMENTS: Dazomet designated as N521 in paper; chloropicrin--proven fungicide for black shank disease
REFERENCE: Morgan, O.D., "The Use of Chemical Soil Drenches to Control PHYTOPHTHORA PARASITICA Var. NICOTIANAE and Their Phytotoxic Effects on Tobacco and Toxicity to Other Soil Flora," Plant Dis. Rep. 47(7):755-761 (1959).

<4971>
CHEMICAL NAME: 1,3,5-Triazin-2(1H)-one, 4-(ethylamino)-6-[(1-methylethyl)amino]-
CHEMICAL COMMON NAME: Hydroxyatrazine
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 10(-5) M
APPLICATION METHODS: Drench to seedlings
EXPERIMENTAL CONDITIONS: Seedlings germinated in dark in vermiculite containing 20 mg/l. streptomycin sulfate at 30 C; drench applied 6 to 24 hr before harvest, excess drained within 5 min after treatment; chromatin isolated from corn roots and from soybean seedlings
EFFECTS: No stimulation of soybean chromatin activity as with atrazine; slight decrease in chromatin activity observed
COMMENTS: Non-phytotoxic metabolite of atrazine
REFERENCE: Penner, D. and R.W. Early, "Effect of Atrazine on Chromatin Activity in Corn and Soybean," Weed Sci. 20(4):367-370 (1972).

<4972>
CHEMICAL NAME: 1,3,5-Triazin-2(1H)-one, 4-amino-1-(2-deoxy-beta-D-ribofuranosyl)-
CHEMICAL COMMON NAME: 5-ACD
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 5.0 X 10(-5) to 1.0 X 10(-4) M
APPLICATION METHODS: Immersion of root tips in assay solutions for up to 48 hr
EXPERIMENTAL CONDITIONS: Laboratory study; root tips (1-2 cm)
EFFECTS: Delayed and non-delayed chromosome aberrations
COMMENTS: Local uncoiling (segment extension) of specific chromosome segments and chromatid aberrations produced; peak of cells with segment extension observed 2-8 hr after treatment (non-delayed effect); cells with chromatid aberrations appeared after recovery times of more than 20 hr (delayed effect)
REFERENCE: Fucik, V., A. Michaelis, and R. Rieger, "On the Induction of Segment Extension and Chromatid Structural Changes in VICIA FABA Chromosomes after Treatment with 5-Azacytidine and 5-Azadeoxycytidine," Mut. Res. 9:599-606 (1970).

<4973>
CHEMICAL NAME: 1,3,5-Triazin-2(1H)-one, 4-amino-1-beta-D-ribofuranosyl-
CHEMICAL COMMON NAME: 5-ACR
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 5.0 X 10(-5) to 1.0 X 10(-4) M
APPLICATION METHODS: Immersion of root tips in assay solutions for up to 48 hr
EXPERIMENTAL CONDITIONS: Laboratory study; root tips (1-2 cm)
EFFECTS: Delayed and non-delayed chromosome aberrations

<4973>
<4973> CONT.
COMMENTS: Local uncoiling (segment extension) of specific chromosome segments and chromatid aberrations produced; peak of cells with segment extension observed 2-8 hr after treatment (non-delayed effect); cells with chromatid aberrations appeared after recovery times of more than 20 hr (delayed effect)
REFERENCE: Fucik, V., A. Michaelis, and R. Rieger, "On the Induction of Segment Extension and Chromatid Structural Changes in VICIA FABA Chromosomes after Treatment with 5-Azacytidine and 5-Azadeoxycytidine," Mut. Res. 9:599-606 (1970).

<4974>
CHEMICAL NAME: 1,3,5-Triazin-2-amine, 4-azido-N-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: C-7019
PLANT: Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Cudweed, low (GNAPHALIUM ULIGONOSA); Broccoli (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Cabbage (BRASSICA OLERACEA); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; 5 year period
EFFECTS: Moderate control of weeds (3 yr) with reduced yields of broccoli and cabbage (1 yr) and cauliflower (2 yr)
COMMENTS: Trifluralin, DCPA, and nitrofen gave eratic weed control and must be applied at highest rates of application permitted by label for even average weed control in most years; two new herbicides pryanchlor and DMC 3950 show promise for use on cole crops in Eastern Canada
REFERENCE: Ivany, J.A. and J.A. Cutcliffe, "Herbicides for Cole Crops in Eastern Canada," Proc. Northeast. Weed Sci. Soc. 27:194-198 (1973).

<4975>
CHEMICAL NAME: 1,3,5-Triazin-2-amine, 4-azido-N-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Aziprotryne
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 2 and 4 kg/ha
APPLICATION METHODS: Postemergence spray at a volume rate of 352 l./ha and pressure of 2.1 kg/cm (2); 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse study; plants watered from above before spraying and from below after spraying; 2 replications; visual assessments at intervals, dry weights determined 8 weeks after spraying
EFFECTS: Chlorosis of young leaves and interveinal necrosis of older leaves 1 to 2 weeks after spraying; normal regrowth; significant reduction in dry weight compared with control
REFERENCE: Clay, D.V., "The Response of Strawberry to a Range of Foliage Acting Herbicides," Proc. Brit. Weed Control Conf. 11:409-416 (1972).

<4976>
CHEMICAL NAME: 1,3,5-Triazin-2-amine, 4-azido-N-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Aziprotryne
PLANT: Rose, wild (ROSA sp.); Plants
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Postemergence
EXPERIMENTAL CONDITIONS: Field study
COMMENTS: Terbacil, atrazine, propachlor, and aziprotryne gave satisfactory weed control except last two which failed to control cruciferous weeds
REFERENCE: Roberts, L. and D.C. Harris, "Use of Terbacil, Atrazine and Other Herbicides in Bush Rose Production," Proc. 11th. Br. Weed Cont. Conf. 11(2):632-634 (1972).

<4977>
CHEMICAL NAME: 1,3,5-Triazin-2-amine, 4-azido-N-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Aziprotryne
PLANT: Cabbage (BRASSICA OLERACEA); Crunchweed (SINAPIS ARVENSIS); Ladysthumb (POLYGONUM PERSICARIA); Spurrey, corn (SPERGULA ARVENSIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ragwort, common (SENECIO VULGARIS); Cauliflower (BRASSICA OLERACEA); Broccoli (BRASSICA OLERACEA); Chickweed, common (STELLARIA MEDIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Fumitory, common (FUMARIA OFFICINALIS); Bluegrass, annual (POA ANNUA); Brussels sprouts (BRASSICA OLERACEA); Knotweed (POLYGONUM AVICULARE)
EXPERIMENTAL DOSE: 1.75, 1.8, and 3.6 lb/A
APPLICATION METHODS: Preemergence and postemergence spray at volume of 40 gpa; 1969--1.8 and 3.6 lb/A; 1970--1.75 lb/A; 1971 & 72--1.8 lb/A
EXPERIMENTAL CONDITIONS: Medium loam and sandy loam soils; randomized block design with 4 to 6 replications when one crop tested and split plot with 3 replications when 2 or 3 crops tested; 10 X 2 yd plot size; at least 2 visual assessments of treatment effect; 1969-1972 tests
EFFECTS: 1969--minor cabbage injury, more pronounced at 3.6 lb/A, 16, 28, 91, 89, 59, and 98% kill of S. ARVENSIS, P. PERSICARIA, S. ARVENSIS, C. ALBUM, VERONICA sp., and S. VULGARIS, respectively at 1.8 lb/A, better control at 3.8 lb/A; 1970--moderate cauliflower injury and minor broccoli and cabbage injury, excellent VERONICA sp. control and good S. MEDIA control, minor brussels sprouts injury and 31% P. AVICULARE kill; 1971--good weed control; 1972--minor cabbage injury, 99, 68, 67, and 85% kill of S. VULGARIS, F. OFFICINALIS, P. ANNUA, and C. BURSA-PASTORIS, respectively
REFERENCE: Cassidy, J.C., "Herbicide Evaluation in Brassica Crops - 1968-72," Proc. Brit. Weed Control Conf. 11:958-964 (1972).

<4978>
CHEMICAL NAME: 1,3,5-Triazin-2-amine, 4-azido-N-(1-methylpropyl)-6-(methylthio)-
CHEMICAL COMMON NAME: C-8250
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Moderate control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<4979>
CHEMICAL NAME: 1,3,5-Triazin-2-amine, 4,6-dichloro-N-(2-chlorophenyl)-
CHEMICAL COMMON NAME: Anilazine
PLANT: Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 1300 ppm
APPLICATION METHODS: Spray treatments with 15-18 ml of suspension; solutions prepared by suspending test compound in tap water containing 0.05% Linor as spreader
EXPERIMENTAL CONDITIONS: Field A (well-grown) and field B (poorly-grown); seedlings transplanted to field on October 12--5 plots and 12 plants per plot, fertilizer added in January, spraying on May 2; analysis of leaves on May 2 and 6; control--tap water and Linor
EFFECTS: No effect on onion leaves; field A plants--26% less DNA than control leaves, same RNA content as control; field B plants--5% more DNA and 4% less RNA content than control; chlorophyll content increased in sprayed leaves; water content, dry matter, and ash content no different than control
REFERENCE: Shishiyama, J., M. Fukutomi, and S. Akai, "Effect of Some Fungicides on the Synthesis of Chlorophylls, Deoxyribonucleic Acid, and Ribonucleic Acid in Onion Leaves," Phytopathology 55:844-847 (1965).

<4980>
CHEMICAL NAME: 1,3,5-Triazin-2-amine, 4,6-dichloro-N-(2-chlorophenyl)-
CHEMICAL COMMON NAME: Dyrene
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 0.75 and 1.50 lb/100 gal
APPLICATION METHODS: Postemergence (postflowering) spray; 50-55 psi to run-off; sprayed 2X
EXPERIMENTAL CONDITIONS: Field (29.5 C) and laboratory (19 C); intact flowers in field and cut flowers in laboratory; spray applied directly to flowers
EFFECTS: At both application rates, moderate injury to flowers when dried 2 or 4 hr at 29.5 C
COMMENTS: Some compounds not phytotoxic after two applications under any conditions (daconil, dithane M-15, dithane Z-78, morsodren, orthocide, phosdrin and thuricide); among phytotoxic chemicals and combinations, there was a greater tendency for injury occurring at 1) high temperature than at the low, 2) fast drying rate than the slow, 3) high temperature at fast rather than slow drying rate, and 4) high temperature at fast drying rate than low temperature at the slow rate
REFERENCE: Engelhard, A.W., "Chemical Sprays: Concentration, Drying Rate and Temperature Effects on Chrysanthemum Flower Quality", Florida State Hort. Soc. 85:370-374 (1973).

<4981>
CHEMICAL NAME: 1,3,5-Triazin-2-amine, 4,6-dichloro-N-(2-chlorophenyl)-
CHEMICAL COMMON NAME: Dyrene
PLANT: Thistle, Canada (CIRSIUM ARVENSE)
EXPERIMENTAL DOSE: 40 mg/flat
APPLICATION METHODS: Topical treatment on leaves
EXPERIMENTAL CONDITIONS: Greenhouse study; light--24 hr fluorescent; temperature--30 C; flat culture
EFFECTS: Severe necrosis at application site wth additional injury away from application site; subsequent abnormal growth
COMMENTS: Dyrene severely injured var. MITE of Canada thistle; damage resembled that caused by bipyridylium herbicides; regrowth from treated plants abnormal; other arylamino-s-triazines slightly to severely phytotoxic to leaf sections of the var. MITE.
REFERENCE: Marriage, P. B., "Herbicidal Activity and Metabolism of Dyrene in Canada Thistle," Weed Sci. 21(5):389-392 (1973).

<4982>
CHEMICAL NAME: 1,3,5-Triazine-2,4(1H,3H)-dione, 3-cyclohexyl-6-(dimethylamino)-1-methyl-
CHEMICAL COMMON NAME: Velpar
PLANT: Weeds; Pine, loblolly (PINUS TAEDA)
EXPERIMENTAL DOSE: 2, 4, 6 and 8 lb/A
APPLICATION METHODS: Preemergence treatments sprayed over newly planted pine seedlings; sprayer at 40 psi and application rate of 20 gpa in Arkansas, Mississippi, and Oklahoma; back-pack boom-type sprayer used in North Carolina, same 20 gpa rate
EXPERIMENTAL CONDITIONS: Field trials, 4 states; Arkansas, Oklahoma and Mississippi--randomized plots, 10 by 100 ft, sandy loams, sandy clay loams, silty sand, and loamy clay soils, 8 wk evaluation in Mississippi and Oklahoma, evaluations at end of growing season in Arkansas; North Carolina--randomized plots, 5 by 100 ft, black and clay loam soils, 8 and 16 wk evaluations
EFFECTS: Arkansas and Oklahoma--3 sites, 80, 50 and 95% weed control at 2 lb/A; Mississippi--2 sites, 90% weed control at both sites at 2 lb/A; North Carolina--2 sites, 90 and 85% weed control at 8 lb/A, 80 and 85% at 6 lb/A, 85 and 65% at 4 lb/A, and 70 and 35% at 2 lb/A; relatively non-toxic to pines
COMMENTS: Light pine needle burn when damage did occur; study indicates velpar should not be applied at rates

<4982>
<4982> CONT.
greater than 1-2 lb/A in late summer, especially if surfactant used--increases chance of seedling mortality
REFERENCE: O'Loughlin, T.C., L.R. Nelson, J.D. Walstad, J.H. Breland, and J.E. Voeller, "Velpar and Other Preemergence Herbicides for Use in Establishment of Loblolly Pine Plantations," Proc. South. Weed Sci. Soc. 29:262-268 (1976).

<4983>
CHEMICAL NAME: 1,3,5-Triazine-2,4(1H,3H)-dione, 3-cyclohexyl-6-(dimethylamino)-1-methyl-
CHEMICAL COMMON NAME: DPX-3674
PLANT: Milfoil, water (MYRIOPHYLLUM VERTICILLATUM); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 0.125 to 2.0 ppm; 90% WP
APPLICATION METHODS: Addition to water
EXPERIMENTAL CONDITIONS: Greenhouse study; deionized water; potted plants immersed; varied temperature--17.5 to 29 C; evaluation time--up to 54 days
EFFECTS: Effective control of macrophytes at 1.0 ppm
COMMENTS: DPX-3674 found in glasshouse trials to control MYRIOPHYLLUM VERTICILLATUM, POTAMOGETON PECTINATUS and VAUCHERIA DICHOTOMA at 1.0 ppm and RHIZOCLONIUM HIEROGLYPHICUM and CLADOPHORA GLOMERATA at 0.5 ppm
REFERENCE: Fowler, M.C., "Laboratory Trials of a New Triazine Herbicide (DPX-3674) on Various Aquatic Species of Macrophytes and Algae," Weed Res. 17(3):191-195 (1977).

<4984>
CHEMICAL NAME: 1,3,5-Triazine-2,4(1H,3H)-dione, 3-cyclohexyl-6-(dimethylamino)-1-methyl-
CHEMICAL COMMON NAME: Velpar
PLANT: Weeds
EXPERIMENTAL DOSE: 12 lb/A
APPLICATION METHODS: Postemergence in 50 gpa water
EXPERIMENTAL CONDITIONS: Treatments applied May 4, control ratings in August
EFFECTS: Good weed control
REFERENCE: Chappell, W.E. and M.L. Link, "Soil Sterilants for Maintaining Electric Sub-stations," Proc. South Weed Sci. Soc. 30:330-331 (1977).

<4985>
CHEMICAL NAME: 1,3,5-Triazine-2,4(1H,3H)-dione, 3-cyclohexyl-6-(dimethylamino)-1-methyl-
CHEMICAL COMMON NAME: Velpar
PLANT: Ragweed, western (AMBROSIA PSILOSTACHYA); Bermudagrass, common (CYNODON DACTYLON); Nightshade, silverleaf (SOLANUM ELAEAGNIFOLIUM); Vaseygrass (PASPALUM URVILLEI); Dallisgrass (PASPALUM DILATATUM)
EXPERIMENTAL DOSE: 4, 6, 8, 12, and 16 lb/A
APPLICATION METHODS: Postemergence spray; dilution in 25, 50, and 100 gal water
EXPERIMENTAL CONDITIONS: Roadside weed control studies
EFFECTS: Plants controlled up to 6 months; different dilutions had similar effects; 8, 12, and 16 lb/A rates no more effective than 6 lb/A
REFERENCE: Allen, T.J. and W.G. McCully, "Control of Roadside Vegetation with Velpar," Proc. South. Weed Sci. Soc. 30:293-295 (1977).

<4986>
CHEMICAL NAME: 1,3,5-Triazine-2,4(1H,3H)-dione, 3-cyclohexyl-6-(dimethylamino)-1-methyl-
CHEMICAL COMMON NAME: DPX-3674
PLANT: Sugarcane (SACCHARUM sp.); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Preemergence directed sprays at 20 gpa, 6 to 8 in. of sugarcane base sprayed
EXPERIMENTAL CONDITIONS: Mid-May applications, ratings 8 weeks later
EFFECTS: 90-100% weed control; sugarcane injured by 2 lb/A rate
COMMENTS: Emergence refers to weeds
REFERENCE: Scott, A.W., Jr. and S.A. Reeves, Jr., "Evaluation of Selected Pre and Postemergence Weed Control Treatments in Sugarcane," Proc. South. Weed Sci. Soc. 30:125-129 (1977).

<4987>
CHEMICAL NAME: 1,3,5-Triazine-2,4(1H,3H)-dione, 3-cyclohexyl-6-(dimethylamino)-1-methyl-
CHEMICAL COMMON NAME: DPX-3674
PLANT: Quackgrass (AGROPYRON REPENS); Grasses; Broadleaf weeds; Arborvitae, Nare's (THUJA OCCIDENTALIS); False cyprus, goldplume (CHAMAECYPARIS PISIFERA); Juniper, Savin (JUNIPERUS SABINA)
APPLICATION METHODS: Postemergence spray; directed to weed foliage and base of ornamentals
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam
EFFECTS: Slight to moderate control of weeds and none to slight damage of ornamentals
COMMENTS: Long term effective weed control obtained with little or no damage to mature narrowleaf evergreen plants, when glyphosate applied in combination with preemergent herbicides
REFERENCE: Haramaki, C., "Control of Perennial and Annual Weeds in Established Plantings of Narrowleaf Evergreens," Proc. Northeast. Weed Sci. Soc. 31:329-324 (1977).

<4988>
CHEMICAL NAME: 1,3,5-Triazine-2,4(1H,3H)-dione, 3-cyclohexyl-6-(dimethylamino)-1-methyl-
CHEMICAL COMMON NAME: DPX-3674
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Grasses; Broadleaf weeds; Sugarcane (SACCHARUM sp.); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.25, 2.5, and 3.0 kg/ha
APPLICATION METHODS: Preemergence spray; 90% water soluble powder formulation
EXPERIMENTAL CONDITIONS: Randomized block design; weed control field studies, 4 replications; laboratory

<4988> CONT.
sugarcane toxicity tests, 6 replications
EFFECTS: Good weed control at 1.25 and 2.5 kg/ha--commercially acceptable; chlorotic and necrotic sugarcane foliage and stunted plants at 3.0 kg/ha; poor purple nutsedge control at 0.5 and 0.25 kg/ha
COMMENTS: Twice the recommended rate used for sugarcane toxicity test
REFERENCE: Iggo, G.A., "Results of Screening Pre-emergence Herbicides for Sugarcane," Proc. S. Afr. Sugar Technol. Assoc. 49:122-125(1975).

<4989>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-(1,1-dimethyl)-N'-ethyl-6-(methylthio)-
CHEMICAL COMMON NAME: Terbutryne
PLANT: Canarygrass (PHALARIS PARADOXA); Canarygrass (PHALARIS BRACHYSTACHYS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.5, 0.625, and 0.75 kg/ha
APPLICATION METHODS: WP formulation; application by commercial field sprayer at volume rate 350-400 l./ha; preemergence and postemergence applications
EXPERIMENTAL CONDITIONS: 3 experiment locations (4 experiments); soil--sandy clay loam for experiments 1,2, and 3, sandy loam for experiment 4; data collected -- (1) stand of wheat and canary grass before postemergence application and 1 month later, (2) number of heads per plant of wheat and canarygrass before harvesting; 200 m2 plot; data determined in two 1 m2 sub-plots randomly chosen in each plot; mechanical grain harvesting from 100 m2 area
EFFECTS: Experiment 1 -- no data; experiment 2 -- highest wheat yield of both F.A. 8193 and Hazera 2152 cultivars was preemergence terbutryne 0.75 kg/ha, no reduction in stand or number of spikes perplant, good control of canarygrass; experiment 3 -- postemergence treatments did not affect wheat stand, spikes per plant reduced by application of terbutryne at earing stage, good control of canary grass; experiment 4 -- preemergence treatments gave higher wheat yield than postemergence treatments, postemergence applications gave better canarygrass control than pretreatments, addition of simazine was phytotoxic to wheat
COMMENTS: Little difference between wheat and canarygrass response to methoprotryne and terbutryne, but herbicide application at specified doses and at precise dates gives canarygrass control; leaching of methoprotryne more than double that of terbutryne, thus more terbutryne than methoprotryne available to wheat when applied preemergence
REFERENCE: Eshel, Y., "Selective Action of Triazines for Control of Wild Canarygrass in Wheat," Weed Res. 12(4): 301-309 (1972).

<4990>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-(1,1-dimethyl)-N'-ethyl-6-(methylthio)-
CHEMICAL COMMON NAME: Terbutryn
PLANT: Castorbean, volunteer (RICINUS COMMUNIS); Cotton (GOSSYPIUM HIRSUTUM); Sorghum, grain (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 2.8 kg/ha
APPLICATION METHODS: Postemergence spray; 188 l/ha
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; time period--1968 to 1970
EFFECTS: Effective control of volunteer castorbean with no adverse effect on crops
COMMENTS: Volunteer castorbean most effectively controlled by preemergence application of propazine in grain sorghum and by fluometuron in cotton; preplant applications of propazine not as effective as preemergence treatments.
REFERENCE: Smith, D.T., A.W. Cooley, D.O. Mooney, and A.F. Wiese, "Herbicidal Control of Volunteer Castorbean," Weed Sci. 20(4):338-340 (1972).

<4991>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-(1,1-dimethyl)-N'-ethyl-6-(methylthio)-
CHEMICAL COMMON NAME: Terbutryne
PLANT: Peanut (ARACHIS HYPOGAEA); Bean, broad (VICIA FABA); Pea, sweet (PISUM SATIVUM); Chickpea (CICER ARIETINUM); Soybean (GLYCINE MAX); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.0 to 6.0 ppmw; WP
APPLICATION METHODS: Preplant incorporation (soil addition)
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Reduced growth for all plants except peanuts at 4.0 ppm and higher concentrations
COMMENTS: Most resistant species was peanuts; soybeans and snap beans most susceptible; broad beans; peas and chickpeas intermediately susceptible; localized applications of terbutryne to different soil layers indicated herbicide was absorbed by roots but not by the emerging shoots of the six species
REFERENCE: Eshel, Y. and B. Rubin, "Differential Tolerance of Six Leguminous Crops to Terbutryne," Israel J. Agric. Res. 22(1):11-15 (1972).

<4992>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-(1,1-dimethyl)-N'-ethyl-6-(methylthio)-
CHEMICAL COMMON NAME: Terbutryn
PLANT: Peanut (ARACHIS HYPOGAEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Junglerice (ECHINOCHLOA COLONUM); Bermudagrass (CYNODON DACTYLON); Nightshade (SOLANUM VILLOSUM)
EXPERIMENTAL DOSE: .5 and 0.75 kg/ha
APPLICATION METHODS: Postemergence spray; aqueous carrier-500 l./ha; 60 sq m plots
EXPERIMENTAL CONDITIONS: Field study; sprinkle irrigation 24 hr after herbicide application and every 2 wk thereafter; sandy loess soil; temperature--20 to 25 C; RH--51 to 68%; weekly hand weeding of controls; phosphorus addition--500 to 600 kg/ha; monthly cultivation when employed
EFFECTS: Effective weed control with application of herbicides singly, in combination, or in conjunction with monthly cultivation; no or minimal effect on peanut yield
COMMENTS: Evaluation of eleven herbicides or herbicide combinations; hand weeding most effective; benefin alone and benefin/terbutryn, alachlor/ terbutryn, diphenamid/terbutryn, and benefin/alachlor combinations as effective as hand weeding with no adverse effect on peanut yield
REFERENCE: Amir, J. and N. Lifshitz, "Weed Control of Irrigated Peanuts in an Arid Zone," J. Agric. Sci. Camb. 86:623-626 (1976).

<4993>
<4993>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-(1,1-dimethylethyl)-N'-ethyl-6-(methylthio)-
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Meadowgrass, rough stalked (POA TRIVIALIS); Timothy (PHLEUM PRATENSE); Fescue, tall (FESTUCA ARUNDINACEA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Ryegrass, perennial (LOLIUM PERENNE); Fescue, meadow (FESTUCA ELATIOR); Cocksfoot
EXPERIMENTAL DOSE: 32, 48, 64, and 96 oz/A
APPLICATION METHODS: Preplanting, preemergence, and postemergence sprays
EXPERIMENTAL CONDITIONS: Clay or heavy clay soils; 1966-67 and 1967-78 main trials, wet weather hampered 1966-67 trial thus study emphasis on 1967-68 trial; spraying dates of 8/22/67, 9/22/67, 1/4/68, 3/4/68, and 3/5/68; 2 to 3 replicates; average for all crop grasses reported
EFFECTS: Complete crop tolerance 35 wk after planting; minor injury 7 and 11 wk after planting; A. MYOSUROIDES--complete control with 32 oz/A at 1 leaf stage, very little control when plant well tillered, good preplanting control at 64 oz/A (23 wk before sowing); P. TRIVIALIS--32 oz/A gave complete control before germination and at 1 leaf stage, little or no control when well tillered
COMMENTS: Crop grasses sown 7/5/67, weed grasses sown 8/21/67, 9/18/67, and 2/29/68
REFERENCE: Shildrick, J.P. and T.J. Arthur, "Control of ALOPECURUS MYOSUROIDES (Blackgrass) and POA TRIVIALIS (Routh-stalked Meadow Grass) in Grass Seed Crops by Herbicides," Nat. Inst. Agric. Bot. (Cambridge) Rep. Acc. 11(2):361-369 (1968).

<4994>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-(1,1-dimethylethyl)-N'-ethyl-6-methoxy-
CHEMICAL COMMON NAME: Terbumeton
PLANT: Marigold, bur (BIDENS PILOSA); Sorrel, wood (OXALIS sp.); (KYLLINGA MONOCEPHALA); Navelwort (HYDROCOTYLE BONARIENSIS); (KYLLINGA POLYPHYLLA); (PASPALUM PANICULATUM); (AGERATUM CONYZOIDES); Nutsedge, purple (CYPERUS ROTUNDUS); Crabgrass (DIGITARIA HORIZONTALIS); Crabgrass (DIGITARIA TIMORENSIS); Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 1.34 to 5.38 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; December trial; 2 replicates; weed assessment in cane field 72 days after spraying
EFFECTS: Weed control--65.3% to 72.7%, control greatest at highest rate; cane germination increased over control
COMMENTS: Weed results tabulated together; code name G.S. 14259; weed control considered good
REFERENCE: McIntyre, G., "Weed Control 1. Evaluation of New Herbicides," Mauritius Sugar Ind. Res. Inst., Annu. Rep. 18:117-119 (1970).

<4995>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-(3-methoxypropyl)-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Methoprotryne
PLANT: Canarygrass (PHALARIS PARADOXA); Canarygrass (PHALARIS BRACHYSTACHYS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.5, 0.75, 1.0, and 1.5 kg/ha
APPLICATION METHODS: WP formulations; application by commercial field sprayer at volume rate 350-400 l./ha; preemergence and postemergence applications
EXPERIMENTAL CONDITIONS: 3 experiment locations (4 experiments); soil--sandy clay loam for experiments 1,2, and 3, sandy loam for experiment 4; data collected -- (1) stand of wheat and canary grass before postemergence application and 1 month later, (2) number of heads per plant of wheat and canarygrass before harvesting; 200 m2 plot; data determined in two 1 m2 sub-plots randomly chosen in each plot; mechanical grain harvesting from 100 m2 area
EFFECTS: Experiment 1 -- wheat tolerated 500 g/ha without stand reduction; canarygrass control very effective at all doses; significant yield reduction with 1.0 and 1.5 kg/ha; highest yield -- 0.5 kg/ha methoprotryne plus 0.075 or 0.1 kg/ha; simazine; experiment 2 -- preemergence spraying at 0.5 kg/ha reduced yield of cultivar F.A. 8193, cultivar Hazera yield not reduced until 0.75 kg/ha; F.A. 8193 yield not affected by postemergence spraying, 0.75 kg/ha reduced yield of Hazera; number of spikes per plant of wheat not affected; moderate canarygrass control; experiment 3 -- postemergence 0.75 kg/na, wheat stand not affected, moderate to good canarygrass control; experiment 4--no data
COMMENTS: Little difference between wheat and canarygrass response to methoprotryne and terbutryne, but herbicide application at specified doses and at precise dates gives canarygrass control; leaching of methoprotryne more than double that of terbutryne, thus more terbutryne than methoprotryne available to wheat when applied preemergence
REFERENCE: Eshel, Y., "Selective Action of Triazines for Control of Wild Canarygrass in Wheat," Weed Res. 12(4): 301-309 (1972).

<4996>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-(3-methoxypropyl)-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: G-36393
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimal lethal concentration 6.31 to 5.84 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<4997>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-ethyl-6-methoxy-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atraton
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 0.55 to 1.57 kg/ha
APPLICATION METHODS: Addition to soil; laboratory sprayer; 413 l./ha at 2.11 kg/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soils-- Bledington and Boddington Barn; pot culture; temperature--13 to 23 C; pH--6.3 or 6.9 or 7.3
EFFECTS: Growth of ryegrass reduced; reduction greater in limed soil (6.9)
COMMENTS: Metoxuron, fenuron, metribuzin, and fluometuron more active in Boddington Barn soil than in Bledington soil; prometryne similar in effect in both soils
REFERENCE: Richardson, W.G. and J.D. Banting, "The Phytotoxicity of Various Herbicides in Two Sandy Loam Soils and the Effect of Liming," Weed Res. 17(3):203-207 (1977).

<4998>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-ethyl-6-methoxy-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atratone
PLANT: Flax (LINUM USITATISSIMUM); Beet, sugar (BETA VULGARIS); Buckwheat (FAGOPYRUM ESCULENTUM)
EXPERIMENTAL DOSE: 0.4 and 0.8 mg/100 g soil
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--20 to 23 C (day) and 15 to 17 C (night); RH--60 to 85%; evaluation time--up to 28 da
EFFECTS: Reduced growth
COMMENTS: Triazine herbicides exerted increasing inhibitory effect on dry and fresh weight yields, transpiration, and growth of seedlings of flax, beet and buckwheat; enhanced accumulation of free amino acids and decrease of simple sugar values noted in aboveground parts of test plants; results interpreted as secondary effects of inhibitory action of triazines on plant photosynthesis; toxicity of tested chemicals to flax, beet, and buckwheat decreased in following order: atrazine, simazine, propazine, atratone, prometone and prometryne; flax more resistant to triazines than beets and buckwheat
REFERENCE: Ploszynski, M. and H. Zurawski, "The Phytotoxic Action of Triazine Herbicides on Flax, Beets, and Buckwheat Seedlings, and Some Physiological Changes Connected With It," Acta Agrobot. 24(2):206-215 (1971).

<4999>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-ethyl-6-methoxy-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atratone
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root Bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310 silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in all plants at 1 and 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<5000>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-ethyl-6-methoxy-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atratone
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.5 to 6.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: No control of weeds or adverse effect on cotton
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<5001>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-ethyl-6-methoxy-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atratone
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious injury to all at 1.5 lb/A and to sorghum and crabgrass at 0.5 lb/A,

<5001>
<5001> CONT.
moderate injury to others at 0.5 lb/A; preemergence subsurface--injury more pronounced than surface treatments; postemergence--serious injury at 2.0 lb/A, moderate injury at 0.5 and 1.0 lb/A
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5002>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-ethyl-6-methoxy-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atratone
PLANT: Barley (HORDEUM VULGARE); Cocklebur, Pennsylvanian (XANTHIUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 2.0 and 5.0 ppm
APPLICATION METHODS: Addition to culture solution
EXPERIMENTAL CONDITIONS: Environmental chamber; hydroponic culture; whole roots or one-third of roots immersed in test solutions; pH--7.0; temperature--16 to 23 C; RH--50 to 70%; photoperiod--12 hr
EFFECTS: Death
COMMENTS: Propham, chlorpropham, atratone and 2,3,6-TBA killed plants whether application was to one-third or all roots; roots in direct contact with propham, chlorpropham and 2,3,6-TBA deformed or killed, while roots in uncontaminated solution remained healthy; atratone and chlorpropham roots transmitted to roots not in toxic solution
REFERENCE: Lyndsay, R.V. and G.S. Hartley, "Studies of the Response of Plants to Root-Applied Herbicides," Weed Res. 3(3):195-204 (1963).

<5003>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-ethyl-6-methoxy-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atratone
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.22 to 4.86 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5004>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-ethyl-6-methoxy-N'-(1-methylpropyl)-
CHEMICAL COMMON NAME: GS-14254
PLANT: Guineagrass (PANICUM MAXIMUM); Vaseygrass (PASPALUM URVILLEI); Bermudagrass, common (CYNODON DACTYLON); Torpedograss (PANICUM REPENS); Bahiagrass (PASPALUM NOTATUM); Paragrass (PANICUM PURPURASCENS)
EXPERIMENTAL DOSE: 6.4 and 8 lb/A and 4 lb/100 gal
APPLICATION METHODS: Postemergence--6.4 and 8 lb/A in 100 and 92 gpa water respectively and 4 lb/100 gal
EXPERIMENTAL CONDITIONS: 3 field experiments; grasses normally found in citrus groves; 1971 and 1972 tests
EFFECTS: Bermuda--moderate (8 lb/A) to good (6.4 lb/A and 4 lb/100 gal) control; torpedo--poor (8 lb/A) to moderate (6.4 lb/A and 4 lb/100 gal) control; vasey--poor control; bahia--moderate control; para--moderate control; guinea--poor control
COMMENTS: Glyphosate, best herbicide tested; suggestion for prolonged weed control--glyphosate (systemic herbicide) in combination with soil sterilants
REFERENCE: Phillips, R.L., "Control of Perennial Grasses in Citrus Groves," Citrus Ind. 54(7):22-23 (1973).

<5005>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-ethyl-6-methoxy-N'-(1-methylpropyl)-
CHEMICAL COMMON NAME: Secbumeton
PLANT: Marigold, bur (BIDENS PILOSA); Sorrel, wood (OXALIS sp.); (KYLLINGA MONOCEPHALA); Navelwort (HYDROCOTYLE BONARIENSIS); (KYLLINGA POLYPHYLLA); (PASPALUM PANICULATUM); (AGERATUM CONYZOIDES); Nutsedge, purple (CYPERUS ROTUNDUS); Crabgrass (DIGITARIA HORIZONTALIS); Crabgrass (DIGITARIA TIMORENSIS); Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 1.34 to 5.38 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; December trial; 2 replicates; weed assessment in cane field 72 days after spraying
EFFECTS: Weed control--69.5% to 76.4%, control greatest at highest rate; cane germination increased over control
COMMENTS: Weed results tabulated together; code name G.S. 14254; weed control considered good
REFERENCE: McIntyre, G., "Weed Control 1. Evaluation of New Herbicides," Mauritius Sugar Ind. Res. Inst., Annu. Rep. 18:117-119 (1970).

<5006>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-methyl-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Norametryne
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)

<5006> CONT.
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious injury to all but cotton (moderate) at 1.5 lb/A and to sorghum and crabgrass at 0.5 lb/A, moderate injury to others at 0.5 lb/A; preemergence subsurface--injury more pronounced than surface treatment; postemergence--serious crabgrass injury
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5007>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-methyl-N'-(1-methylethyl)-6-(methylthio)-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<5008>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N-methyl-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Desmetryne
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6)M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.85 to 4.36 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5009>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Promethyne
PLANT: Soybean (GLYCINE MAX);Grasses;Broadleaf weeds
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Preplant spray with soil incorporation (5 cm depth); preemergence spray; 188 l./ha; varied combinations of herbicides and types of applications studied
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy clay loam and Cecil sandy loam; 188 l./ha
EFFECTS: Effective control of grass weeds but moderate control of broadleaves with slight damage to soybean in preemergence application
COMMENTS: Sequential treatment of vernolate with linuron, prometryne, or chloramben ester controlled weeds more effectively in soybeans than did trifluralin or nitralin applied with the same preemergence treatments; soybean injury was not severe enough to reduce seed yields in any year.
REFERENCE: Johnson, B.J., "Effect of Herbicide Combinations on Weeds and Soybeans," Weed Sci. 19(6): 740-742 (1971).

<5010>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Soybean (GLYCINE MAX);Grasses;Broadleaf weeds
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Soil incorporated by rototiller; injection; postemergence spray; 188 to 282 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil -- Cecil sandy loam; herbicides studied either 2 or 3 years; combinations of herbicides evaluated also
EFFECTS: Effective control of weeds in postemergence application with slight damage to soybeans
COMMENTS: Vernolate injected into sandy loam soil controlled higher percentage of early weeds in soybeans in 2 years out of 3 when compared with incorporated vernolate at same rate by conventional methods; late season weed control was enhanced by split applications of herbicides applied postemergence in sequence with vernolate; chloroxuron applied early postemergence plus linuron or prometryne applied in split applications as late and layby treatments gave the best weed control
REFERENCE: Johnson, B.J., "Response of Weeds and Soy Beans to Vernolate and Other Herbicides," Weed Sci. 19(4):372-377 (1971).

<5011>
<5011>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 8.3 x 10(-6) M
APPLICATION METHODS: Immersion of leaves in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--20 C; light intensity--2500 lux; evaluation times--0 to 50 hr; CO(2) fixation measured as well as P(32) uptake
EFFECTS: Inhibition of photosynthesis
COMMENTS: Prometryne inhibited photosynthesis after 12-30 hr and ioxynil after 50 hr; results, compared with those on P(32) incorporation into nucleic acid, where rate of incorporation almost immediately affected, suggest that herbicides do not interfere primarily with photosynthetic reaction cycle.
REFERENCE: Beruter, J. and A.T. Temperli, "Influence of Prometryne and Ioxynil on Photosynthesis and Nucleic Acid Metabolism in Plants," Experientia 26(6):600-601 (1970).

<5012>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Nutsedge (CYPERUS sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Pigweed (AMARANTHUS sp.); Pigweed, spiny (AMARANTHUS SPINOSUS); Jimsomweed (DATURA STRAMONIUM); Purslane, common (PORTULACA OLERACEA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.0 to 3.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of broadleafs and grasses except nutsedge (no control) with good corn tolerance
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<5013>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Capewood (ARCTOTHECA CALENDULA); Oat (AVENA SATIVA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.28 and 0.56 kg/ha
APPLICATION METHODS: Postemergence spray; 112 l./ha
EXPERIMENTAL CONDITIONS: Field study; time period-- 1966 to 1970; 5 locations in Australia
EFFECTS: Moderate to effective control of capeweed with no adverse effect on crop yields
COMMENTS: Most satisfactory herbicides tested for control of capeweed were bromoxynil, linuron, diquat and prometryne; in one year tested, methabenzthiazuron effective
REFERENCE: Reeves, T.G. and J.M. Lumb, "Selective Chemical Control of Capeweed in Wheat," Aust. J. Exp. Agric. Anim. Husb. 12:60-64 (1972).

<5014>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 0.39 to 0.44 kg/ha
APPLICATION METHODS: Addition to soil; laboratory sprayer; 413 l./ha at 2.11 kg/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soils-- Bledington and Boddington Barn; pot culture; temperature--13 to 23 C; pH--6.3 or 6.9 or 7.3
EFFECTS: Reduced growth of ryegrass with no effect by liming
COMMENTS: Metoxuron, fenuron, metribuzin, and fluometuron more active in Boddington Barn soil than in Bledington soil; prometryne similar in effect in both soils
REFERENCE: Richardson, W.G. and J.D. Banting, "The Phytotoxicity of Various Herbicides in Two Sandy Loam Soils and the Effect of Liming," Weed Res. 17(3):203-207 (1977).

<5015>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS) ; Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Crabgrass, large (DIGITARIA SANGUINALIS); Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Preemergence application with an Oxford Precision Sprayer at a rate of 280 l./ha and at 2 kg/cm2 pressure
EXPERIMENTAL CONDITIONS: Sandy loam soil; spinach plants 10 cm apart in rows 1m apart; plot -- 3 rows 3m long; 4 replications of each treatment; weeds per 930 sq cm were counted; plants harvested from center of each plot 37 days after emergence
EFFECTS: Spinach yield reduced 75%; the following year, spinach germination entirely prevented; good control of lamb's-quarters and redroot pigweed
COMMENTS: Increase in plant nitrate can result from soil or lower nitrate reductase activity; authors think that decrease in some phase of nitrate reduction by herbicide action is responsible for nitrate accumulation
REFERENCE: Cantliffe, D.J. and S.C. Phatak, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Spinach," Hortscience 9(5):470-472 (1974).

<5016>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Pigweed, smooth (AMARANTHUS HYBRIDUS); Amaranth, palmer (AMARANTHUS PALMERI); Pigweed, tumble (AMARANTHUS ALBUS); Amaranth, spiny (AMARANTHUS SPINOSUS); Pigweed, prostrate (AMARANTHUS GRAECIZANS)
EXPERIMENTAL DOSE: 1, 2, and 3 lb/A
APPLICATION METHODS: Preemergence application
EXPERIMENTAL CONDITIONS: Greenhouse study; species planted in pots in five replications; sandy loam soil
EFFECTS: Smooth and redroot pigweed and Palmer amaranth less susceptible than other 3 species; excellent control of tumble and prostrate pigweed and spiny amaranth
REFERENCE: Santelmann, P.W. and L. Evetts, "Germination and Herbicide Susceptibility of Six Pigweed Species," Weed Sci. 19(1):51-54 (1971).

<5017>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Castorbean, volunteer (RICINUS COMMUNIS); Cotton (GOSSYPIUM HIRSUTUM); Sorghum, grain (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.9, 1.7, and 2.2 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; 188 l/ha
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; time period--1968 to 1970
EFFECTS: Moderate control in preemergence (1.7 and 2.2 kg/ha) and effective control postemergence (0.9 kg/ha) with no adverse effect on crops
COMMENTS: Volunteer castorbean most effectively controlled by preemergence application of propazine in grain sorghum and by fluometuron in cotton; preplant applications of propazine not as effective as preemergence treatments.
REFERENCE: Smith, D.T., A.W. Cooley, D.O. Mooney, and A.F. Wiese, "Herbicidal Control of Volunteer Castorbean," Weed Sci. 20(4):338-340 (1972).

<5018>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 0.56 and 1.12 kg/ha
APPLICATION METHODS: Postemergence (early and late) spray; 188 l./ha (early) and 235 l./ha (late, directed spray); X-77 surfactant (0.5%)
EXPERIMENTAL CONDITIONS: Field study; soil-Cecil sandy clay loam; time period--1969 to 1971
EFFECTS: Effective weed control with no adverse effect on sunflower
COMMENTS: Excellent grass control and poor broadleaf weed control obtained from early postemergence treatments of RP 17623 when applied as over-the-top spray at either cotyledon or first-leaf stage of sunflower growth, weed control results similar to RP 17623 from several herbicides applied as late-directed postemergence sprays; early postemergence treatments with RP 17623 caused some early injury to sunflower plants and reduction in achene oil percent when compared with achenes from untreated plants, but achene yields not reduced
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Postemergence on Weeds and Sunflowers," Crop Sci. 12(1):695-697 (1972).

<5019>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Flax (LINUM USITATISSIMUM); Beet, sugar (BETA VULGARIS); Buckwheat (FAGOPYRUM ESCULENTUM)
EXPERIMENTAL DOSE: 0.4 and 0.8 mg/100 g soil
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--20 to 23 C (day) and 15 to 17 C (night); RH--60 to 85%; evaluation time--up to 28 da
EFFECTS: Reduced growth
COMMENTS: Triazine herbicides exerted increasing inhibitory effect on dry and fresh weight yields, transpiration, and growth of seedlings of flax, beet and buckwheat; enhanced accumulation of free amino acids and decrease of simple sugar values noted in aboveground parts of test plants; results interpreted as secondary effects of inhibitory action of triazines on plant photosynthesis; toxicity of tested chemicals to flax, beet, and buckwheat decreased in following order: atrazine, simazine, propazine, atratone, prometone and prometryne; flax more resistant to triazines than beets and buckwheat
REFERENCE: Ploszynski, M. and H. Zurawski, "The Phytotoxic Action of Triazine Herbicides on Flax, Beets, and Buckwheat Seedlings, and Some Physiological Changes Connected With It," Acta Agrobot. 24(2):206-215 (1971).

<5020>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Soybean (GLYCINE MAX); Sesbania, hemp (SESBANIA EXALTATA); Mexicanweed (CAPERONIA CASTANAEFOLIA); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 0.56 and 1.12 kg/ha
APPLICATION METHODS: Postemergence spray; 2.0 m swath; 0.5% X-77 surfactant
EXPERIMENTAL CONDITIONS: Field study; soil--heavy clay; evaluation time--2 or 6 wk
EFFECTS: At higher rate, moderate damage to soybean, effective control of hemp sesbania and moderate control of other weeds
COMMENTS: As postemergence treatments, bentazon plus surfactant applied topically and linuron plus surfactant or metribuzin plus surfactant directed gave good to excellent control of dayflower, hemp sesbania was controlled by treatments containing linuron, metribuzin or prometryne, all plus surfactant and directed; mexicanweed was controlled by directed applications of treatments containing linuron, metribuzin,

<5020>
<5020> CONT.
prometryne or 2,4-DB, all plus surfactant; good control of morningglory was obtained with directed applications of treatments containing 2,4-DB, dinoseb + naptalam plus surfactant, or prometryne plus surfactant
REFERENCE: Eastin, E.F., "Control of Problem Weeds in Texas Soybeans," Proc. South. Weed Sci. Soc. 26:67-73 (1973).

<5021>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Pine, loblolly (PINUS TAEDA); Pine, slash (PINUS ELIOTTII); Plants
EXPERIMENTAL DOSE: 1.1, 2.2, and 4.5 kg/ha
APPLICATION METHODS: Preemergence application; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; locations in 12 states (AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, and VA); evaluation time--varied, up to 132 days; sprinkler irrigation
EFFECTS: Effective weed control (79-80 days) generally with no adverse effect on pine seedlings (dry weight reduction in KY only at 4.5 kg/ha)
COMMENTS: Preemergence weed control in slash and loblolly pine seedbeds appears feasible; diphenamid and trifluralin not injurious to pine seedlings at twice rate needed for good control of grasses; sprinkler irrigation gave adequate incorporation of trifluralin for good early season grass control, but residual activity might have been increased by a more thorough soil incorporation; diphenamid exhibited a longer residual activity than trifluralin at all locations
REFERENCE: Dill, T.R. and M.C. Carter, "Preemergence Weed Control in Southeastern Forest Nurseries," Weed Sci. 21(4):363-366 (1973).

<5022>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Sorghum (SORGHUM BICOLOR); Bean, kidney (PHASEOLUS VULGARIS); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.005, 0.01, 0.02, 0.04, and 0.06 kg/ha
APPLICATION METHODS: Postemergence spray; 75 l./ha; undiluted, non-phytotoxic isoparaffinic carrier
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; photoperiod--16 hr; temperatures--23 to 27 C
EFFECTS: Growth reduction of all species
COMMENTS: Simultaneous application of two herbicides resulted in additive response on all three plants, except that slight antagonism observed at one rate on both bean and cucumber; synergistic response observed when dinoseb treatment delayed for at least 1 day on bean and cucumber and 2 days on sorghum; prometryn movement in bean leaves not altered by simultaneous dinoseb application
REFERENCE: Jordan, T.N. and G.F. Warren, "Effects of Prometryn and Dinoseb Combinations in an Undiluted Oil Carrier," Weed Sci. 23(4):328-332 (1975).

<5023>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Pimpernel, common (ANAGALLIS ARVENSIS); Crunchweed (SINAPIS ARVENSIS); Pigweed (AMARANTHUS sp.); Bindweed, field (CONVOLVULUS ARVENSIS)
EXPERIMENTAL DOSE: 0.5 and 1.0 kg/ha
APPLICATION METHODS: Postemergence application; 200 l./ha; trifluralin and chlorthal-dimethyl incorporated by rototilling; all others not incorporated
EXPERIMENTAL CONDITIONS: Field study; plots sprayed twice a year over a 4-year period; sprinkler irrigation; greenhouse study; residues determined by mustard bioassay
EFFECTS: Effective control of AMARANTHUS and moderate control of remaining weeds with little or no residual phytotoxic effect
COMMENTS: Phytotoxicity to weeds in decreasing order: diuron, bromacil, simazine, trifluralin, prometryne, neburon, fluometuron, pyrazon, diphenamid, chlorthal-dimethyl; persistence of herbicides in decreasing order: diuron, bromacil, simazine, neburon, fluometuron, trifluralin, prometryne; control produced by pyrazon improved with the number of applications, but that of diphenamid and chlorthal-dimethyl remained weak and short
REFERENCE: Horowitz, M., T. Blumenfeld, G. Herzlinger, and N. Hulin, "Effects of Repeated Applications of Ten Herbicides on Weed Population, Residue Accumulation and Nitrification," Weed Res. 14(2):97-109 (1974).

<5024>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Postemergence treatment in water at 30 gpa; 0.5% by volume of tank mix of surfactant X-77 added
EXPERIMENTAL CONDITIONS: 3 year experiment (1968-1970); 4 applications at 2-to 3-day intervals to each plot, initial application made in June; randomized split-plot design, 16 ft rows 3 ft apart; directed postmemergence spray to plant base; plant injury, stem damage, and yield among primary observations
EFFECTS: Early season injury--significant at applications 3 and 4 first year, significant at all applications second and third year; late season injury--significant injury both seasons at applications 2, 3 and 4; stem damage--significant at all applications in 1969, no significant damage in 1970; significant yield decrease with application 2, 3, and 4 (3 year average)
COMMENTS: Early season injury--lower leaves killed from spray application; late season injury--chlorotic venation and leaf deterioration
REFERENCE: Johnson, B.J., "Multiple Applications of Herbicides on Soybeans," Ga. Agric. Res. 14(1):5-8 (1972).

<5025>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1.0 ppm w
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Laboratory study; pot culture; temperature--25 to 32 C; light intensity--500 ft C; soil--Eufala fine sand
EFFECTS: Marginal leaf chlorosis
COMMENTS: CUCUMIS SATIVA developed marginal chlorosis with fluometuron, palmate veinal chlorotic pattern with prometryne,; auxin-type manifestations of meristematic tissues with picloram, and an interveinal chlorotic pattern with pyriclor
REFERENCE: Lynd, J.W., C. Rieck, D. Barnes, D. Murray, and P.W. Santelmann, "Indicator Plant Aberrations at Threshold Soil Herbicide Levels," J. Agron. 59(1):194-196 (1967).

<5026>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 2.0 to 16.0 lb/A
APPLICATION METHODS: Added to soil and mixed
EXPERIMENTAL CONDITIONS: Germination chamber; temperature--75 F (day) and 72 F night; paper carton culture; soil--Plainfield sand; evaluation time--up to 54 da
EFFECTS: No effect on germination with kill of seedlings at 8 and 16 lb/A
COMMENTS: Seed germination influenced only very slightly, or not at all, by variety of soil-incorporated herbicides; in contrast, all but one of soil-incorporated herbicides caused seedling mortality and decreased dry-weight production of seedlings; greatest toxicity observed at highest dosages used; EPTC and CDAA at high dosages very toxic to tree seedlings, whereas DCPA showed no deleterious effects at any dosage
REFERENCE: Kozlowski, T.T. and J.H. Torrie, "Effect of Soil Incorporation of Herbicides on Seed Germination and Growth of Pine Seedlings," Soil Sci. 100(2):139-146 (1965).

<5027>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryn
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.56 kg/ha
APPLICATION METHODS: Postemergence spray; 374 l./ha; 0.5% blended surfactant; one, two, or three applications made four, eight, or twelve weeks after cotton emergence
EXPERIMENTAL CONDITIONS: Field study; soil--dry mulch; preplant application of bensulide or trifluralin; directed postemergence application of diuron prior to test applications; time period--1971 through 1974; evaluation time--harvest
EFFECTS: Seed cotton yield reduced
COMMENTS: DSMA and MSMA applied 4 or 8 weeks after emergence had less effect on cotton yield, boll components, and fiber properties than applications made 12 weeks after emergence; most single, over-the-top applications of DSMA, fluometuron, or DSMA with fluometuron 4 weeks after emergence did not affect cotton yield, boll components, or fiber properties
REFERENCE: Arle, H.F. and K.C. Hamilton, "Over-the-Top Applications of Herbicides in Cotton," Weed Sci. 24(2):166-169 (1976).

<5028>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Millet, Japanese (ECHINOCHLOA CRUSGALLI); Sorghum, grain (SORGHUM BICOLOR); Nutsedge, yellow (CYPERUS ESCULENTUS); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.36 and 6.72 kg/ha
APPLICATION METHODS: Preplant spray; 37 dkl./ha; soil incorporated (10 cm depth)
EXPERIMENTAL CONDITIONS: Field study; soil--Hespera sandy loam and Hespera loamy sand; evaluation time--2 and 5 wk and harvest; sorghum and millet used as bioassay plants in persistence evaluation
EFFECTS: Moderate control of nutsedge and severe damage to millet and sorghum with no adverse effect on seed cotton yield
COMMENTS: All herbicides controlled nutsedge for at least 1 month in two or more experiments; cotton most tolerant to applications of CP-53619, of prometryne, of San-6706, and of methazole; higher rates of San-6706, and methazole and all rates of alachlor, R-7465, and R-12001 reduced yield of cotton in one or more experiments
REFERENCE: Keeley, P.E., J.H. Miller, and C.H. Carter, "Weed and Cotton Response to Several Herbicides," Weed Sci. 21(4):327-329 (1973).

<5029>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Peanut (ARACHIS HYPOGAEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Junglerice (ECHINOCHLOA COLONUM); Bermudagrass (CYNODON DACTYLON); Nightshade (SOLANUM VILLOSUM)
EXPERIMENTAL DOSE: 0.375 and 0.500 kg/ha
APPLICATION METHODS: Postemergence spray; aqueous carrier-500 l./ha; 60 sq m plots
EXPERIMENTAL CONDITIONS: Field study; sprinkle irrigation 24 hr after herbicide application and every 2 wk thereafter; sandy loess scil; temperature--20 to 25 C; RH--51 to 68%; weekly hand weeding of controls; phosphorus addition--500 to 600 kg/ha; monthly cultivation when employed
EFFECTS: Effective weed control with application of herbicides singly, in combination, or in conjunction with monthly cultivation; no or minimal effect on peanut yield

<5029>
<5029> CONT.
COMMENTS: Evaluation of eleven herbicides or herbicide combinations; hand weeding most effective; benefin alone and benefin/terbutryn, alachlor/terbutryn, diphenamid/terbutryn, and benefin/alachlor combinations as effective as hand weeding with no adverse effect on peanut yield
REFERENCE: Amir, J. and N. Lifshitz, "Weed Control of Irrigated Peanuts in an Arid Zone," J. Agric. Sci. Camb. 86:623-626 (1976).

<5030>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Soybean (GLYCINE MAX); Sida, spiny (SIDA SPINOSA)
EXPERIMENTAL DOSE: 1.68 kg/ha
APPLICATION METHODS: Postemergence spray; 0.5% v/v Multifilm X-77
EXPERIMENTAL CONDITIONS: Field study; soils--Loring silt loam and Collins silt loam; preplant soil incorporation of herbicides not effective for prickly sida; evaluation times--3 wk (preemergence) and 2 wk (postemergence)
EFFECTS: Effective control of sida for 2 of 3 years with slight vigor reduction and stand reduction in soybean
COMMENTS: Chlorbromuron provided better control of prickly sida than did linuron which was more consistently effective than naptalam plus dinoseb; chlorbromuron applied as preemergence treatment caused slight crop injury; in most cases preemergence treatments followed by cultivation were effective in providing season-long control; descending order of effectiveness for prickly sida control by the postemergence herbicides was: chlorbromuron, metribuzin, prometryne, dinoseb
REFERENCE: Jeffery, L.S., J. Connell, T. McCutchen, and J.R. Overton, "Response of Prickly Sida and Soybeans to Various Herbicides," Weed Sci. 24(2):202-204 (1976).

<5031>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Alfalfa (MEDICAGO SATIVA); Cabbage (BRASSICA OLERACEA); Lettuce (LACTUCA SATIVA); Beet, sugar (BETA VULGARIS); Soybean (GLYCINE MAX); Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1.8 kg/ha
APPLICATION METHODS: Soil incorporation; disking to 15 cm depth
EXPERIMENTAL CONDITIONS: Field study; herbicides applied at six-month intervals at two locations; soils--Mesa and Yuma, AZ; crops planted at 24, 18, 12, 6, and 0 intervals after herbicide applications; residual effects studied after fallow periods
EFFECTS: Persisted for up to 18 mos and affected stand or fresh weight yield of alfalfa, cabbage, lettuce, soybean, and sugarbeet; no apparent adverse effect on sorghum at any time
COMMENTS: Herbicides can persist for 2 years or more in fallow desert soils and affect susceptible crops; considerable differences observed with two soil types; considerable differences in crop susceptibility
REFERENCE: Hamilton, K.C. and H.F. Arle, "Persistence of Herbicides in Fallow Desert Cropland," Weed Sci. 20(6):573-576 (1972).

<5032>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Soybean (GLYCINE MAX); Jimsomweed (DATURA STRAMONIUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS)
EXPERIMENTAL DOSE: 2.24 kg/ha
APPLICATION METHODS: Postdirected spray at 280.5 l./ha to lower 1/3 of soybean plant in 30 cm bands
EXPERIMENTAL CONDITIONS: Mattapex silt loam; randomized complete block design with 4 replications; jimsonweed 25 to 30 cm tall at application
EFFECTS: Commercially unacceptable jimsonweed control; pigweed control barely acceptable
COMMENTS: No reported soybean injury
REFERENCE: Parochetti, J.V., "Postemergence and Postdirected Broadleaved Weed Control for Soybeans," Proc. Northeast. Weed Sci. Soc. 27:75-79 (1973).

<5033>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious injury to all but cotton (minor damage) at 1.5 lb/A and to sorghum and crabgrass at 0.5 lb/A, moderate injury to corn and soybean at 0.5 lb/A; preemergence subsurface--serious injury to all but cotton at 0.5 and 1.5 lb/A, moderate cotton injury; postemergence--serious crabgrass injury at 0.5, 1.0, and 1.5 lb/A
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5034>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Addition to soil, mixed by blending 5 or 10 min.
EXPERIMENTAL CONDITIONS: Greenhouse study; flat culture; daily watering; evaluation time--7 wk; inhibition studied at 5 to 30 C
EFFECTS: Reduced growth especially at 25 to 30 C
COMMENTS: High temperature greatly accelerated herbicide toxicity, but effects of temperature varied greatly among herbicides; atrazine and simazine more toxic than other herbicides tested at all temperatures; toxicity of simazine and atrazine apparent early, whereas effects of propazine, prometryne, prometone, and ipazine somewhat delayed
REFERENCE: Kozlowski, T.T., S. Sasaki, and J.H. Torrie, "Influence of Temperature on Phytotoxicity of Triazine Herbicides to Pine Seedlings," Amer. J. Bot. 54(6):790-796 (1967).

<5035>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<5036>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Grasses; Broadleaf weeds; Maple, amur (ACER GINNALA); Euonymus, Japanese (EUONYMUS FORTUNEI); Goldenbells (FORSYTHIA INTERMEDIA); Juniper, common (JUNIPERUS COMMUNIS); Pine, red (PINUS RESINOSA); Oak, pin (QUERCUS PALUSTRIS); Rose (ROSA WICHURAIANA); Lilac (SYRINGA VULGARIS); Yew, upright (TAXUS CUSPIDATA); Periwinkle, common (VINCA MINOR)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Postplanting spray; 30 gal/A at 30 lb/sq in
EXPERIMENTAL CONDITIONS: Field study; soil--Stoy silt loam; application one week after planting in winter; time period--1961 and 1962
EFFECTS: Effective weed control at 2.0 lb/A with little or no damage to woody plants except QUERCUS, ROSA, and VINCA (moderate damage)
COMMENTS: Effective weed control, lasting until June of following year obtained with atrazine, CIPC, kloben, simazine, lorox, ametryne, and prometryne; atrazine, kloben and simazine gave nearly 100% control; atrazine caused plant injury with more dead plants in treated plots than in control planting; simazine and kloben safer materials
REFERENCE: Sherwood, L.V. and H.R. Kemmerer, "The Influence of Winter Applied Preemergence Herbicides on Weed Growth among Woody Ornamental Plants," Am. Soc. Hort. Sci. 85:657-662 (1964).

<5037>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 1.1 kg/ha
APPLICATION METHODS: Preemergence sprays (principally); 330 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Newell loam and Caymanas clay loam; irrigation; evaluation time--approx. 4 mo
EFFECTS: Moderate control of weeds and reduced vigor of peanuts
COMMENTS: Preemergence alachlor most promising herbicide; combined with preplant incorporated vernolate if nutgrass serious; napropamide and metobromuron merit futher testing
REFERENCE: Hammerton, J.L., "Problems of Herbicide Assessment in Peanuts in Jamaica," Weed Res. 16(1):27-35 (1976).

<5038>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.38 to 4.65 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5039>
<5039>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Prometryne
PLANT: Ginger (ZINGIBER OFFICINALE); (ACHYRANTHES INDICA); Spurge (EUPHORBIA sp.); Nutsedge, purple (CYPERUS ROTUNDUS); (PHYLLANTHUS AMARUS); (SORGHUM VERTICILLIFLORUM); (KALLSTROEMIA MAXIMA); Windmill grass (CHLORIS RADIATA)
EXPERIMENTAL DOSE: 1.6 kg/ha
EXPERIMENTAL CONDITIONS: Single trial
EFFECTS: Herbicide safe to yellow ginger; good weed control to nine weeks
COMMENTS: Herbicide safe to yellow ginger; good weed control to nine weeks
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<5040>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-bis(3-methoxypropyl)-6-(methylthio)-
CHEMICAL COMMON NAME: CP-17029
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6)M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.65 to 6.00 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5041>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-diethyl-6-(methylthio)-
CHEMICAL COMMON NAME: Simetryne
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.5 to 8.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: No control of weeds or adverse effect on cotton
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<5042>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-diethyl-6-(methylthio)-
CHEMICAL COMMON NAME: Simetryne
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious injury to sorghum and crabgrass at 0.5 and 1.5 lb/A and to soybean and corn at 1.5 lb/A, minor to moderate cotton injury; preemergence subsurface--serious injury to sorghum, soybean, and crabgrass at 0.5 and 1.5 lb/A and to corn and cotton at 1.5 lb/A; postemergence--serious crabgrass injury at 0.5, 1.0, and 2.0 lb/A
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5043>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-diethyl-6-(methylthio)-
CHEMICAL COMMON NAME: 2,4-Bis(ethylamino)-6-methylmercapto-3-triazine
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<5044>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-diethyl-6-(methylthio)-
CHEMICAL COMMON NAME: Simetryne
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.7 to 4.36 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5045>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-diethyl-6-methoxy-
CHEMICAL COMMON NAME: Simetone
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.5 to 6.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: No control of weeds or adverse effect on cotton
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<5046>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-diethyl-6-methoxy-
CHEMICAL COMMON NAME: Simetone
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--minor injury to cotton and moderate injury to other crops at 0.5 lb/A, sorghum and soybean seriously injured at 1.5 lb/A with moderate injury to corn and cotton, crabgrass killed at both rates; preemergence subsurface--more damage to crops than surface application with crabgrass control being somewhat less; postemergence--serious crabgrass injury at 2.0 lb/A
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5047>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-diethyl-6-methoxy-
CHEMICAL COMMON NAME: Simetone
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 500 micro M
APPLICATION METHODS: Addition to assay preparations of chloroplasts
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: Increased photochemical activity and chloroplast bleaching
COMMENTS: Dual wavelength spectrophotometry applied to observations of small spectral changes during biochemical reactions in intact tissue; based on principle that absorbance reading at wavelength of isobestic point of reaction fluctuates with time in same manner as reading at wavelength where an absorbance change due to reaction takes place
REFERENCE: Inoue, Y., Yaginuma, N., Ogawa, T., Konishi, K., and K. Shibata, "Spectral Changes of Chloroplasts as a Means to Examine Phytotoxic Effects of Herbicides," in Environmental Toxicology of Pesticides, F. Matsumura, G.M. Boush, and T. Misato (Eds.) Academic Press, New York and London, pp. 549-570 (1972).

<5048>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N,N'-diethyl-6-methoxy-
CHEMICAL COMMON NAME: Simetone
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time--11 da
EFFECTS: Minimum lethal concentration 6.15 to 4.91 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as

<5048>
<5048> CONT.
root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5049>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N'-ethyl-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Ametryne
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 0.56 and 1.12 kg/ha
APPLICATION METHODS: Postemergence (early and late) spray; 188 l./ha (early) and 235 l./ha (late, directed spray); X-77 surfactant (0.5%)
EXPERIMENTAL CONDITIONS: Field study; soil-Cecil sandy clay loam; time period--1969 to 1971
EFFECTS: Effective control of grasses with moderate control of broadleaf weeds and no adverse effect on sunflower
COMMENTS: Excellent grass control and poor broadleaf weed control obtained from early postemergence treatments of RP 17623 when applied as over-the-top spray at either cotyledon or first-leaf stage of sunflower growth; weed control results similar to RP 17623 from several herbicides applied as late-directed postemergence sprays; early postemergence treatments with RP 17623 caused some early injury to sunflower plants and reduction in achene oil percent when compared with achenes from untreated plants, but achene yeilds not reduced
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Postemergence on Weeds and Sunflowers," Crop Sci. 12(1):695-697 (1972).

<5050>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N'-ethyl-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Ametryne
PLANT: Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 2.5 and 4.0 lb/A
APPLICATION METHODS: Cane set germination (sprouting)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--5 wk
EFFECTS: No adverse effect on cane set germination
COMMENTS: Karmex-2,4-D ester appeared to cause depression in cane yields but compensated for this by an improvement in juice quality; overall improvement in cane yields and juice quality resulting from Gesapax-Actril-D treatment quite noticeable as it outyielded all others; only Daconate seemed to result in noticeable sugar yield depression primarily because of its adverse effect on juice quality; dalapon and gramoxone in combination with 2,4-D ester did not seriously affect yields
REFERENCE: Maddan, W.L. and E.M. Christie, "Weed Control at Monymusk," Jamaican Assoc. Sugar Tech. 33:76-82 (1972).

<5051>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N'-ethyl-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Ametryne
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in all plants at 1 and 10 ppm; shoot--less than 50% inhibition in all plants at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<5052>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N'-ethyl-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Ametryne
PLANT: Horseweed (CONYZA CANADENSIS); Knotweed (POLYGONUM sp.); Lespedeza, sericea (LESPEDEZA CUNEATA); Lettuce, tall (LACTUCA CANADENSIS); Blackberry (RUBUS sp.); Goldenrod (SOLIDAGO sp.); Aster (ASTER sp.); Sycamore, American (PLANTANUS OCCIDENTALIS)
EXPERIMENTAL DOSE: 4.5 and 9.0 kg/ha
APPLICATION METHODS: Preemergence application with 80% WP
EXPERIMENTAL CONDITIONS: Fertile bottomland; 1580 sycamore seedlings/ha hand planted; plots of 0.04 ha established; 5 replications of each treatment in May; 3 year study
EFFECTS: 76% weed control at 4.5 kg/ha and 95% control at 9.0 kg/ha through June, decreased to 16% at 4.5 and 62% at 9.0 by August; minor phytotoxic symptoms to sycamores-leaf bronzing, curling, and necrosis; 75% sycamore survival at 4.5 kg/h and 54% at 9.0 kg/ha; increased height, diameter, and volume of growth of trees on treated plots
COMMENTS: Weed control not improved by increasing dosage; phototoxicity to sycamore was not considered serious; residual weed control not very significant the second and third years; first year weed control enables establishment and maintenance of sycamores, 60 to 70% weed control is effective for tree growth
REFERENCE: Fitzgerald, C.H., R.F. Richards, C.W. Selden, and J.T. May, "Three Year Effects of Herbaceous Weed Control," Weed Sci. 23(1):32-35 (1975).

<5053>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N'-ethyl-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Ametryne
PLANT: Yam (DIOSCOREA sp.); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed (AMARANTHUS DUBIUS); Painted-leaf (EUPHORBIA HETEROPHYLLA); Junglerice (ECHINOCHLOA COLONUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.12, 3.36, and 10.10 kg/ha
APPLICATION METHODS: Preemergence application delivered in 340 l./ha of water
EXPERIMENTAL CONDITIONS: Heavy clay soil; randomized complete block design with 4 to 8 replications; spring or summer planting; flaming used in conjunction with ametryne in some experiments
EFFECTS: Low rate did not control weeds satisfactorily; levels that gave weed control longer than 8 wk gave crop injury (leaf chlorosis, leaf and shoot deformation)--10.1 kg/ha inhibited annual weeds 10 wks but induced prominent crop injury
COMMENTS: Ametryne, cultivation or both combined do not give satisfactory weed control; flaming followed by herbicide gave effective weed control until late fall
REFERENCE: Gaskins, M.H. and H. Delpin, "Weed Control in New Plantings of Steroid-Producing DIOSCOREA Species," Weed Sci. 21(3):263-265 (1973).

<5054>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N'-ethyl-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Ametryne
PLANT: Guineagrass (PANICUM MAXIMUM); Vaseygrass (PASPALUM URVILLEI); Bermudagrass, common (CYNODON DACTYLON); Torpedograss (PANICUM REPENS); Bahiagrass (PASPALUM NOTATUM); Paragrass (PANICUM PURPURASCENS)
EXPERIMENTAL DOSE: 8 lb/A and 4 lb/100 gal
APPLICATION METHODS: Postemergence--8 lb/A in 100 gpa water and in 92 gpa water and 4 lb/100 gal
EXPERIMENTAL CONDITIONS: 3 field experiments; grasses normally found in citrus groves; 1971 and 1972 tests
EFFECTS: Bermuda--good control at 4 lb/100 gal and 8 lb/A at 6 wk, fair control at 12 wk with 8 lb/A; torpedo--poor to moderate control; vasey--poor control; bahia--no test; para--moderate control; guinea--poor control
COMMENTS: Glyphosate, best herbicide tested; suggestion for prolonged weed control--glyphosate (systemic herbicide) in combination with soil sterilants
REFERENCE: Phillips, R.L., "Control of Perennial Grasses in Citrus Groves," Citrus Ind. 54(7):22-23 (1973).

<5055>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N'-ethyl-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Ametryne
PLANT: Ginger (ZINGIBER OFFICINALE); (ACHYRANTHES INDICA); Spurge (EUPHORBIA sp.); Nutsedge, purple (CYPERUS ROTUNDUS); (PHYLLANTHUS AMARUS); (SORGHUM VERTICILLIFLORUM); (KALLSTROEMIA MAXIMA); Windmill grass (CHLORIS RADIATA)
EXPERIMENTAL DOSE: 2.2 kg/ha
EXPERIMENTAL CONDITIONS: Single trial
EFFECTS: Herbicide safe to yellow ginger; good weed control to nine weeks
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<5056>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N'-ethyl-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Ametryne
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: Effective initial control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<5057>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N'-ethyl-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Ametryne
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Postplanting spray; 30 gal/A at 30 lb/sq in
EXPERIMENTAL CONDITIONS: Field study; soil--Stoy silt loam; application one week after planting in winter; time period--1961 and 1962
EFFECTS: Moderate weed control
COMMENTS: Effective weed control, lasting until June of following year obtained with atrazine, CIPC, kloben, simazine, lorox, ametryne, and prometryne; atrazine, kloben and simazine gave nearly 100% control; atrazine caused plant injury with more dead plants in treated plots than in control planting; simazine and kloben safer materials
REFERENCE: Sherwood, L.V. and H.R. Kemmerer, "The Influence of Winter Applied Preemergence Herbicides on Weed Growth among Woody Ornamental Plants," Am. Soc. Hort. Sci. 85:657-662 (1964).

<5058>
<5058>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, N'-ethyl-N'-(1-methylethyl)-6-(methylthio)-
CHEMICAL COMMON NAME: Ametryne
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.55 to 4.86 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5059>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 2-chloro-N,N,N'-triethyl-
CHEMICAL COMMON NAME: Trietazine
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.5 to 6.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: No control of weeds or adverse effect on cotton
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<5060>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 2-chloro-N,N,N'-triethyl-
CHEMICAL COMMON NAME: Trietazine
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious injury to crabgrass at 1.5 lb/A but moderate injury to soybean and sorghum and minor injury to corn and cotton, moderate injury to crabgrass at 0.5 lb/A and minor injury to others; preemergence subsurface--all but corn showed more pronounced injury than surface treatment; postemergence--moderate crabgrass injury at 2.0 lb/A
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5061>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 2-chloro-N,N,N'-triethyl-
CHEMICAL COMMON NAME: Trietazine
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants; Pepper, pimento
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Undefined effect on crop plants or poor weed control (not given) or both; eliminated from further consideration for these crops
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<5062>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 2-chloro-N,N,N'-triethyl-
CHEMICAL COMMON NAME: Trietazine
PLANT: Bindweed, black (POLYGONUM CONVOLVULUS); Pea, sweet (PISUM SATIVUM); Weeds
EXPERIMENTAL DOSE: Medium soils--1.12, 1.40, 1.70, 2.24, and 3.40 kg/ha; light soils--0.84; 1.05; 1.28, 1.68, and 2.55 kg/ha; heavy soils--1.40, 1.75, 2.12, 2.80, and 4.25 kg/ha
APPLICATION METHODS: Pre-and postemergence treatments in 200 l./ha water and 1.4 kg/cm(2) pressure--18 preemergent and 6 postemergence sites
EXPERIMENTAL CONDITIONS: 24 test sites; soils varied from loamy coarse sand to clay loam; 8 X 2 m plot size with 4 replications
EFFECTS: Good to excellent overall weed control; best at 3.40 kg/ha; moderate control of bindweed; pea yield reduction at 2 sites using 3.40 kg/ha where light soil and shallow planting conditions existed

<5062> CONT.
COMMENTS: No meaningful weed assessment at 9 of the 24 test sites; data presented for medium soils; 3.4 kg/ha is over twice the recommended dose; trietazine considered relatively safe; trietazine plus simazine also gave good weed control and good yields
REFERENCE: Ball, A.P., C. Harris, and R. K. Pfeiffer, "The Use of Trietazine and a Trietazine/Simazine Mixture for Weed Control in Peas," Proc. Brit. Weed Control Conf. 11:528-533(1972).

<5063>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 2-chloro-N,N,N'-triethyl-
CHEMICAL COMMON NAME: Trietazine
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.29 to 3.86 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5064>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-(1,1-dimethylethyl)-N'-ethyl-
CHEMICAL COMMON NAME: GS-13529
PLANT: Grasses
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Field study; soil--Brookston clay loam; time period--1970 to 1972
EFFECTS: Moderate control of grasses
COMMENTS: Triazine and urea herbicides reduced sucrose level of seedlings of barnyardgrass and yellow foxtail compared with their effectiveness in controlling these weeds by pre-emergence application to maize; in 2 years out of 3, a significant positive correlation obtained between sucrose content of the third leaf and number of these grasses on field plots 2 months after planting
REFERENCE: Marriage, P. B. and W. J. Saidak, "Control of Barnyardgrass and Yellow Foxtail by Herbicides in Relation to the Sucrose Content of the Seedling Leaves," Weed Res. 14(2):115-118 (1974).

<5065>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-(1,1-dimethylethyl)-N'-ethyl-
CHEMICAL COMMON NAME: Terbuthylazine
PLANT: Marigold, bur (BIDENS PILOSA); Sorrel, wood (OXALIS sp.); (KYLLINGA MONOCEPHALA); Navelwort (HYDROCOTYLE BONARIENSIS); (KYLLINGA POLYPHYLLA); (PASPALUM PANICULATUM); (AGERATUM CONYZOIDES); Nutsedge, purple (CYPERUS ROTUNDUS); Crabgrass (DIGITARIA HORIZONTALIS); Crabgrass (DIGITARIA TIMORENSIS); Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 1.34 to 5.38 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; December trial; 2 replicates; weed assessment in cane field 72 days after spraying
EFFECTS: Weed control--67.8% to 71.2%, control greatest at highest rate; cane germination increased over control
COMMENTS: Weed results tabulated together; code name G.S. 13529; weed control considered good
REFERENCE: McIntyre, G., "Weed Control 1. Evaluation of New Herbicides," Mauritius Sugar Ind. Res. Inst., Annu. Rep. 18:117-119 (1970).

<5066>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-(3-methoxypropyl)-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: G-34698
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.38 to 4.80 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5067>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Cyprazine
PLANT: Nutsedge (CYPERUS sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Pigweed (AMARANTHUS sp.); Pigweed, spiny (AMARANTHUS SPINOSUS); Jimsonweed (DATURA STRAMONIUM); Purslane, common (PORTULACA OLERACEA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 1% EC

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Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of broadleafs and generally moderate control of grasses except nutsedge (no control) with good corn tolerance
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<5068>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Cyprazine
PLANT: Crabgrass (DIGITARIA sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA); Pigweed (AMARANTHUS sp.); Spanish needles (BIPENS BIPINNATA)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Postemergence spray; 40 gal/A at 25 psi; 1% EC Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravely silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of all weeds
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<5069>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Cyprazine
PLANT: Soybean (GLYCINE MAX); Alfalfa (MEDICAGO SATIVA); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 1.12, 2.24, 2.8, and 3.36 kg/ha
APPLICATION METHODS: Preemergence and postemergence applications with small-plot sprayer in 217 l./ha water at 2.11 kg/cm2 pressure; 1.12 and 2.24 kg/ha postemergence, 2.24 kg/ha also preemergence
EXPERIMENTAL CONDITIONS: Herbicide applied to cornfield -- 20 Soil samples from upper 10.16 cm of soil taken from each experiment 6, 12, 18, and 26 weeks after corn sowing; Bolivia silt loam soil and Keomah silt loam soil; soil samples from each of 4 replications of each treatment combined to form composite samples; 8 seeds of alfalfa, oats or soybeans planted in 4 pots of soil from each treatment; pots placed in growth chamber 25 days -- day length 13 hours
EFFECTS: Significant alfalfa yield reduction except postemergence 1.12 and 2.24 kg/ha at 26 weeks; serious growth injury to oats at all rates and sampling dates; all treatments reduced soybean growth at 6 or 12 weeks, at 26 weeks 2.24 kg/ha preemergence and 1.12 and 2.24 kg/ha postemergence had no significant yield reduction
COMMENTS: Results suggest that residual injury (carryover injury) is less likely when soybeans rather than oats or alfalfa follow corn; elimination of carryover injury probable by using short-residual herbicides such as alachlor and by combination of small amounts of persistent herbicides (cyprozine or atrazine) with short-residual herbicides
REFERENCE: Fink, R.J., "Phytotoxicity of Herbicide Residues in Soils," Agron. J. 64:804-805 (1972).

<5070>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Cyprazine
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Mustard, wild (BRASSICA KABER); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 1% EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate weed control except mustard (effective control) with no adverse effect on LIROPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<5071>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Cyprazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 0.75-2.0 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays; 60 gal/A; applied singly and in combination in some instances
EXPERIMENTAL CONDITIONS: Field study; no cultivation
EFFECTS: Effective against foxtail only
COMMENTS: Postemergence treatments generally less effective on crabgrass and panicum and more effective on foxtails; sometimes only 2 or 3 plant species tested
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

<5072>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Cyprazine
PLANT: Corn (ZEA MAYS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.75 and 1.5 lb/A
APPLICATION METHODS: Preemergence and postemergence treatments at 30 gpa; bicycle sprayer application; formulation--1 lb/gal in oil and 4 lb/gal
EXPERIMENTAL CONDITIONS: Field experiments, 3 years (1971-1973); plots, 10 by 30 ft; randomized complete block design with 4 replications; Mattapex silt loam; visual rating; spring planting
EFFECTS: Foxtail--early and late postemergence treatments very effective; panicum--fair control with preemergence treatments, early postemergence application at 1.5 lb/A effective, late postemergence applications (1 lb/gal formulation) had significantly less control than early postemergence, 4 lb/gal formulation gave effective control; corn--variable postemergence effects (injury ranged from 0 to 20%), no injury from preemergence treatment, yields not reduced
REFERENCE: Parochetti, J.V., "Cyprazine, Cyanazine, and Atrazine for Weed Control in Corn," Proc. Northeast. Weed Sci. Soc. 28:1-6 (1974).

<5073>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Cyprazine
PLANT: Plants; Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 2.0 and 3.0 kg/ha
APPLICATION METHODS: Preemergence and postemergence sprays; numerous combined applications
EXPERIMENTAL CONDITIONS: Field study; area affected by soil salinity
EFFECTS: Moderate weed control at both rates for both applications with 3.0 kg/ha more effective; preemergence application more effective than postemergence; no adverse effect on cane yield
COMMENTS: Only asulam and metribuzin in repeat applications during fallow barely reduced abundant weeds prior to planting cane and maintained effectiveness until field breaking in early November; only combination of asulam and 2,4-D amine in repeat applications brought about rice plants unaffected by phytotoxicity
REFERENCE: Peng, S. Y., C. T. Wang, and L. T. Twu, "Sugarcane Cultivation and Chemical Weed Control in Saline Soils in Taiwan," Taiwan Sugar Taipei. 24(1):281-286 (1977).

<5074>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Cyprazine
PLANT: Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.75, 1.0, and 2.0 lb/A
APPLICATION METHODS: Preemergence applications principally, but some postemergence applications (alachlor, cyprazine, and cyanazine); 60 gal/A; 40 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1970 to 1972
EFFECTS: Effective control of yellow foxtail and moderate control of fall panicum at 1.0 and 2.0 lb/A rates
COMMENTS: Preemergence herbicides which controlled large crabgrass also controlled fall panicum; these included: alachlor, linuron, cyanazine and prynachlor; herbicides which did not control large crabgrass and fall panicum included atrazine, cyprazine and dicamba
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

<5075>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Cyprazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 lb/A; EC
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: Effective control of weeds in pre- and postemergence applications; initial moderate injury and no yield reduction of corn in postemergence but no adverse effects on corn in preemergence
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<5076>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Cyprazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence and postemergence applications; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (5-10-10) and diazinon (4.0 lb/A) applied before disking
EFFECTS: Effective control of weeds in preemergence and postemergence applications but corn injury also occurred with postemergence treatment; oil enhanced damage to weed species and corn
COMMENTS: Combination preemergence or postemergence treatments about as effective as herbicides alone
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<5077>
<5077>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Cyprazine
PLANT: Grasses
EXPERIMENTAL DOSE: 1.1 and 2.2 kg/ha
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Field study; soil--Brookston clay loam; time period--1970 to 1972
EFFECTS: Slight to moderate control of grasses at 2.2 kg/ha
COMMENTS: Triazine and urea herbicides reduced sucrose level of seedlings of barnyardgrass and yellow foxtail compared with their effectiveness in controlling these weeds by pre-emergence application to maize; in 2 years out of 3, a significant positive correlation obtained between sucrose content of the third leaf and number of these grasses on field plots 2 months after planting
REFERENCE: Marriage, P. B. and W. J. Saidak, "Control of Barnyardgrass and Yellow Foxtail by Herbicides in Relation to the Sucrose Content of the Seedling Leaves," Weed Res. 14(2):115-118 (1974).

<5078>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-cyclopropyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Cyprazine
PLANT: Quackgrass (AGROPYRON REPENS); Orchard grass (DACTYLIS GLOMERATA); Bluegrass, Kentucky (POA PRATENSIS); Dandelion, common (TARAXACUM OFFICINALE); Crabgrass, large (DIGITARIA SANGUINALIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2 and 4 lb/A
APPLICATION METHODS: Postemergence in water at 40 gpa
EXPERIMENTAL CONDITIONS: Woodbridge fine sandy loam; 2 tons/A lime and 800 lb/A 15-15-15 fertilizer applied April 17, corn seeded May 22; 9 by 30 ft plot; herbicide treatments April 24 when grass growth just starting and May 27 when grass was 10 to 12 inches tall; field experiments; above average rainfall
EFFECTS: May 27 treatment--2 lb/A gave poor dandelion, fairly good crabgrass control, and moderate control of other species, 4 lb/A gave good control of all but dandelion (poor control)
COMMENTS: No April 24 treatment; combinations with other herbicides also tested; no reported corn injury
REFERENCE: Peters, R.A. and W.M. Dest, "Glyphosate for Perennial Sod Kill in No-Tillage Corn," Proc. Northeast. Weed Sci. Soc. 27:1-6 (1973).

<5079>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Plants;Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1.5 kg/ha
APPLICATION METHODS: Preemergence spray; 80% WP
EXPERIMENTAL CONDITIONS: Field study; evaluation time--14, 35, and 75 days; time period--1964 and 1965
EFFECTS: Moderate to effective control of weeds with no adverse effects on sorghum
COMMENTS: Preemergence application of triazines effected early weed control, which lasted for about 10 weeks; crop growth and grain yield under the chemical treatments were favourable
REFERENCE: Chadhokar, P.A. and V.S. Mani, "Effect of Herbicides on Weed Control and Grain Production in Sorghum," Indian J. Agric. Sci. 42(7):610-613 (1972).

<5080>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Nutsedge (CYPERUS sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Pigweed (AMARANTHUS sp.); Pigweed, spiny (AMARANTHUS SPINOSUS); Jimsomweed (DATURA STRAMONIUM); Popolo (SOLANUM NIGRUM); Floras paintbrush (EMILIA SONCHIFOLIA); Purslane, common (PORTULACA OLERACEA); Richardia (RICHARDIA SCABRA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 to 4.0 lb/A
APPLICATION METHODS: Preemergence spray (40 gal/A) at 25 psi; granular broadcast with cyclone seeder; 80% WP Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of broadleafs and ricegrass but less effective control of other grasses with good corn tolerance
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<5081>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Crabgrass (DIGITARIA sp.); Junglerice (ECHINOCHLOA COLONUM); Sandbur (CENCHRUS ECHINATUS); Goosegrass (ELEUSINE INDICA); Purslane, common (PORTULACA OLERACEA); Pigweed (AMARANTHUS sp.); Spanish needles (BIPENS BIPINNATA)
EXPERIMENTAL DOSE: 2.0 to 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 40 gal/A at 25 psi; 80% WP Formulation
EXPERIMENTAL CONDITIONS: Field study; soils--Halii gravelly silty clay, Kula loam, Wahiawa silty clay, and Waialua clay; 4 locations in Hawaii
EFFECTS: Effective control of broadleafs with slight to moderate control of grasses
REFERENCE: Tanaka, J.S., R.R. Romanowski, R.T. Sakuoka, and J.A. Crozier, "Herbicide Evaluation Studies with Sweetcorn (ZEA MAYS L.) in Hawaii," Hawaii Agric. Exp. Stn. Res. Rep. 194:3-28 (1974).

<5082>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Pigweed, redroot (AMARANTHUS PETROFLEXUS); Pigweed, smooth (AMARANTHUS HYBRIDUS); Amaranth, palmer (AMARANTHUS PALMERI); Pigweed, tumble (AMARANTHUS ALBUS); Amaranth, spiny (AMARANTHUS SPINOSUS)
EXPERIMENTAL DOSE: 1.25, and 2.5 lb/A
APPLICATION METHODS: Postemergence applications
EXPERIMENTAL CONDITIONS: Field study; applications made when plants 3 to 6 inches tall; observations made 13 days after treatment
EFFECTS: 2.5 rate more effective, 80-90% control of all species except Palmer (70% control)
COMMENTS: Little variation in pigweed susceptibility to preplant and preemergence herbicides tested, (no specific data given); differences in pigweed susceptibility noted using postemergence herbicides
REFERENCE: Santelmann, P.W. and L. Evetts, "Germination and Herbicide Susceptibility of Six Pigweed Species," Weed Sci. 19(1):51-54 (1971).

<5083>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Soybean (GLYCINE MAX); Alfalfa (MEDICAGO SATIVA); Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 2.8 kg/ha
APPLICATION METHODS: Preemergence applications with tractor mounted small-plot sprayer in 217 l./ha water at spray pressure of 2.11 kg/cm2
EXPERIMENTAL CONDITIONS: Herbicide applied to cornfield -- 20 soil samples from upper 10.16 cm of soil taken from each experiment 6, 12, 18, and 26 weeks after corn sowing; Bolivia silt loam soil and Keomah silt loam soil; soil samples from each of 4 replications of each treatment combined to form composite samples; 8 seeds of alfalfa, oats or soybeans planted in 4 pots of soil from each treatment; pots placed in growth chamber 25 days -- day length 13 hours
EFFECTS: Significant alfalfa yield reduction; serious injury to oats at each collection date; 6 and 12 week yields reduced in soybeans but 26 week yield showed no significant reduction
COMMENTS: Results suggest that residual injury (carryover injury) is less likely when soybeans rather than oats or alfalfa follow corn; elimination of carryover injury probable by using short-residual herbicides such as alachlor and by combination of small amounts of persistent herbicides (cyprazine or atrazine) with short-residual herbicides
REFERENCE: Fink, R.J., "Phytotoxicity of Herbicide Residues in Soils," Agron. J. 64:804-805 (1972).

<5084>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Horseweed (CONYZA CANADENSIS); Poplar, yellow (LIRIODENDRON TULIPIFERA); Button bush (CEPHALANTHUS OCCIDENTALIS); Elderberry (SAMBUCUS CANADENSIS); Sumac, smooth (RHUS GLABRA); Honeysuckle, Japanese (LONICERA JAPONICA)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Preemergence application as 80% WP; applications with hand sprayers
EXPERIMENTAL CONDITIONS: Level bottomland with soil of alluvial origin; hand planted with density of 610 yellow poplar seedlings per acre; grid pattern of 20 square plots 1/40th acre in size established; each treatment applied to 5 plots
EFFECTS: Initial foliar burn on yellow poplar but effect was only temporary; good control of weeds; no control of woody bushes and vines; yellow poplar height increased with % weed control
COMMENTS: Growth expressions (height, diameter, etc.) greater on plots treated with sprays of WP formulations -- authors note the advantage of early weed control for growth, early control not provided by granular applications
REFERENCE: Fitzgerald, C.H., and C.W. Selden, "Effects of Herbaceous Weed Control in a Yellow Poplar Plantation," Proc. South. Weed Sci. Soc. 26:288-293 (1973).

<5085>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Castorbean, volunteer (RICINUS COMMUNIS); Cotton (GOSSYPIUM HIRSUTUM); Sorghum, grain (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1.1 and 1.7 kg/ha
APPLICATION METHODS: Postemergence spray; 188 l/ha
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; time period--1968 to 1970
EFFECTS: Moderate to effective castorbean control with no adverse effect on crops
COMMENTS: Volunteer castorbean most effectively controlled by preemergence application of propazine in grain sorghum and by fluometuron in cotton; preplant applications of propazine not as effective as preemergence treatments.
REFERENCE: Smith, D.T., A.W. Cooley, D.O. Mooney, and A.F. Wiese, "Herbicidal Control of Volunteer Castorbean," Weed Sci. 20(4):338-340 (1972).

<5086>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Lamb's-quarters (CHENOPODIUM ALBUM); Purslane, common (PORTULACA OLERACEA); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 43 gal/A at 35 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam; supplemental irrigation; crops direct seeded
EFFECTS: Moderate control of crabgrass and panicum; effective control of purslane and lamb's-quarters; no corn injury

<5086>
<5086> CONT.
COMMENTS: Outstanding candidates for selectivity in seeded cabbage and control of barnyardgrass, purslane, and pineappleweed were H22234 and oryzalin; alachlor also gave excellent control but initial stunting of cabbage seedlings; by end of the season, phytotoxicity not visible with alachlor or any other treatment.
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicides for Weed Control in Sweet Corn and Cabbage," Proc. Northeast. Weed Sci. Soc. 31:256-260 (1977).

<5087>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Soil (50 g) containing herbicides added to surface of soil in which apple trees were growing
EXPERIMENTAL CONDITIONS: Environmental chamber; light intensity--21.6 klux; photoperiod--15 hr; temperature--21 C (day) and 16 C (night)
EFFECTS: Reduced photosynthesis and growth
COMMENTS: Monuron caused greatest decrease in photosynthesis, followed by atrazine and simazine, diuron had no effect on photosynthesis; monuron and atrazine applications resulted in decreased plastochron index; influence of herbicides on photosynthesis apparent 10 days following treatment; effect persisted for remainder of experimental period of 40 days
REFERENCE: Sharma, D.P., D.C. Ferree, and F.O. Hartman, "Effect of Some Soil Applied Herbicides on Net Photosynthesis and Growth of Apple Trees," Hortscience 12(2):153-154 (1977).

<5088>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Bursage, wollyleaf (FRANSERIA TOMENTOSA)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Soil sterilant application with and without incorporation; postemergence sprays at varied stages of plant development; liquid sprays at 188 l/ha; pellets or granules broadcast by hand; oil emulsion
EXPERIMENTAL CONDITIONS: Field study; non-crop areas; time period--1962 to 1968; evaluation time--up to 3 yr; soil--clay loam
EFFECTS: Generally ineffective control
REFERENCE: Smith, D.T., A.F. Wiese, and A.W. Cooley, "Woollyleaf Bursage Response to Selected Herbicides," Weed Sci. 20(6):554-556 (1972).

<5089>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 2.5 and 4.0 lb/A
APPLICATION METHODS: Cane set germination (sprouting)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--5 wk
EFFECTS: No adverse effect on cane set germination
COMMENTS: Karmex-2,4-D ester appeared to cause depression in cane yields but compensated for this by an improvement in juice quality; overall improvement in cane yields and juice quality resulting from Gesapax-Actril-D treatment quite noticeable as it outyielded all others; only Daconate seemed to result in noticeable sugar yield depression primarily because of its adverse effect on juice quality; dalapon and gramoxone in combination with 2,4-D ester did not seriously affect yields
REFERENCE: Maddan, W.L. and E.M. Christie, "Weed Control at Monymusk," Jamaican Assoc. Sugar Tech. 33:76-82 (1972).

<5090>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Couchgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2) M, 10(-3), and 10(-4) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect at any application rates
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<5091>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: WP formulation; spray applied in 40 gpa volume
EXPERIMENTAL CONDITIONS: Sassafras loam soil; plots--4 rows or 14 ft x 20 ft; randomized block design with 3 replications; May 24 planting and August 8 ratings and harvest; center 2 rows of each plot used for yield

<5091> CONT.
determination
EFFECTS: 91% broadleaf and 53% grass control at 1.0 lb/A; 93% broadleaf and 53% grass control at 1.5 lb/A; no significant effect on corn yield
COMMENTS: Combination with other herbicides proved more effective than single herbicide treatments
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

<5092>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Sorghum (SORGHUM BICOLOR); Plants
EXPERIMENTAL DOSE: 2.5 kg/ha
APPLICATION METHODS: Formulation--98% atrazine; preemergence treatments as spray in 1000 l. water
EXPERIMENTAL CONDITIONS: Rain-fed conditions, light black soil; 4 replications, randomized block design with plot size 610 cm x 458 cm
EFFECTS: No effect on germination; effective weed control; grain yield higher than control
COMMENTS: Simazine and atrazine more effective in weed control and grain yield than other herbicides tested; combination of simazine (1.25 kg/ha) preemergence plus 2,4-D (1 kg/ha) postemergence also gave good weed control and grain yield
REFERENCE: Krishnamurthy, K., "Effect of Herbicides on Weeds and Yield of Sorghum," Indian J. Agric. Sci. 40(5):474-480 (1970).

<5093>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Preplant incorporated (disc), preemergence, and postemergence sprays; 30 gal/A at 55 psi
EXPERIMENTAL CONDITIONS: Field study; 12 locations in IA
EFFECTS: Effective control of broadleaf weeds and moderate control of grasses; all application types about equally effective
COMMENTS: Preplant-incorporated treatments more consistent in grass and broadleaf weed control than preemergence treatments; preplant-incorporated herbicide butylate plus R-25788 and EPTC plus R-25788 and preplant or preemergence chemical such as alachlor and CGA-24705 provided good to excellent grass control but needed assistance of broadleaf controlling herbicides such as atrazine, cyanazine, and procyazine
REFERENCE: Studt, D.M. and V.M. Jennings, "Corn Herbicide Evaluations Across Iowa in 1975," Proc. North Cent. Weed Control Conf. 30:146-150 (1975).

<5094>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Flax (LINUM USITATISSIMUM); Beet, sugar (BETA VULGARIS); Buckwheat (FAGOPYRUM ESCULENTUM)
EXPERIMENTAL DOSE: 0.4 and 0.8 mg/100 g soil
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--20 to 23 C (day) and 15 to 17 C (night); RH--60 to 85%; evaluation time--up to 28 da
EFFECTS: Reduced growth
COMMENTS: Triazine herbicides exerted increasing inhibitory effect on dry and fresh weight yields, transpiration, and growth of seedlings of flax, beet and buckwheat; enhanced accumulation of free amino acids and decrease of simple sugar values noted in aboveground parts of test plants; results interpreted as secondary effects of inhibitory action of triazines on plant photosynthesis; toxicity of tested chemicals to flax, beet, and buckwheat decreased in following order: atrazine, simazine, propazine, atratone, prometone and prometryne; flax more resistant to triazines than beets and buckwheat
REFERENCE: Ploszynski, M. and H. Zurawski, "The Phytotoxic Action of Triazine Herbicides on Flax, Beets, and Buckwheat Seedlings, and Some Physiological Changes Connected With It," Acta Agrobot. 24(2):206-215 (1971).

<5095>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays; 60 gal/A; applied singly and in combination in some instances
EXPERIMENTAL CONDITIONS: Field study; no cultivation
EFFECTS: Postemergence application was more effective than preemergence application; combinations of atrazine with alachlor, linuron, or cyanazine were effective
COMMENTS: Postemergence treatments generally less effective on crabgrass and panicum and more effective on foxtails; sometimes only 2 or 3 plant species tested
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

<5096>
<5096>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root Bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310 silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in all plants at 1 and 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<5097>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Corn (ZEA MAYS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Preemergence and postemergence treatments at 30 gpa with bicycle sprayer; 80% WP formulation
EXPERIMENTAL CONDITIONS: Field experiments, 3 years (1971-1973); plots, 10 by 30 ft; randomized complete block design with 4 replications; Mattapex silt loam; visual rating; spring planting
EFFECTS: Foxtail--effective control; panicum--effective preemergence and early postemergence control; no corn injury
COMMENTS: Late postemergence treatment control not as good for foxtail or panicum as other application times
REFERENCE: Parochetti, J.V., "Cyprazine, Cyanazine, and Atrazine for Weed Control in Corn," Proc. Northeast. Weed Sci. Soc. 28:1-6 (1974).

<5098>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Corn (ZEA MAYS); Plants
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Spray; 40 gal/A at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Sarpy fine sandy loam; time period--1970 and 1971
EFFECTS: Effective weed control and slight initial damage to sweet corn but no adverse effect on corn yield
COMMENTS: No herbicide used significantly increased yield; cleanly cultivated plots yielded significantly more than plots treated with basamaize, propachlor, or bladex
REFERENCE: Greig, J.K. and M. Asif, "Effects of Herbicides on Yield, Weed Control, and Nutrient Content of Sweet Corn", Proc. N. Centr. Weed Contr. Conf. 26:99-101 (1971).

<5099>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Copperleaf, hop-hornbeam (ACALYPHA OSTRYAEFOLIA)
EXPERIMENTAL DOSE: 2.8 kg/ha
APPLICATION METHODS: Preemergence treatment in spray volume of 280 or 374 l./ha
EXPERIMENTAL CONDITIONS: Sandy loam soil; 2 year study; randomized complete block designs with 3 or 4 replications; control ratings averaged over 2 years
EFFECTS: 97% weed control 25 days after treatment
COMMENTS: Hophornbeam copperleaf--southwestern weed prevalent in peanuts
REFERENCE: Baldwin, F., P. Santelmann, and H. Greer, "Weed Control Systems for Hophornbeam Copperleaf Control in Peanuts," Agron. J. 66:789-792 (1974).

<5100>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Corn (ZEA MAYS); Chickweed, common (STELLARIA MEDIA); Orach (ATRIPLEX PATULA); Lamb's-quarters (CHENOPODIUM ALBUM); Speedwell (VERONICA sp.); Sowthistle, annual (SONCHUS OLERACEUS)
EXPERIMENTAL DOSE: 1.68 and 3.36 kg/ha
APPLICATION METHODS: Preemergence application made with knapsack sprayer at a volume of 562 l./ha
EXPERIMENTAL CONDITIONS: Oxford clay soil; rows--3.7 m long and 61 cm apart, final corn density, 11 plants/m(2); split plot, randomized soil design with 3 replications
EFFECTS: 1.68 and 3.36 kg/ha gave 100% weed control; no significant effect on maize yield when compared with handweeded check
COMMENTS: Ludwig notes that residual activity may prove phytotoxic to a different crop planted the following year on the same land
REFERENCE: Ludwig, J.W., "Effects of Herbicides on the Productivity of Fodder Maize with Special Reference to Pre-emergence Applications of 2,4-D Amine," Weed Res. 13(1):1-11 (1973).

<5101>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Corn (ZEA MAYS); Chickweed, common (STELLARIA MEDIA); Speedwell (VERONICA sp.); Knotweed (POLYGONUM AVICULARE); Fool's parsley (AETHUSA CYNAPIUM)
EXPERIMENTAL DOSE: 0.28, 0.56, 1.12 and 2.24 kg/ha
APPLICATION METHODS: Preemergence and postemergence applications with an Oxford Precision Sprayer at 2.11 kg/cm(2) pressure and 225 l./ha volume
EXPERIMENTAL CONDITIONS: Maize sown in plots of 3 rows, 3.7 m long and 61 cm apart; Oxford clay soil; hand weeded controls; weeds assessed in June for preemergence applications made on May 2 and 3 weeks after foliar treatment for postemergence applications; preemergence experiments made under wet conditions
EFFECTS: Preemergence--0.28 kg/ha gave excellent control of chickweed, speedwell and knotweed but only moderate fool's-parsley control (66%), other rates gave effective control of all species with 1.12 and 2.24 kg/ha giving 100% control; postemergence--0.56 kg/ha gave effective control (98%) of speedwell, moderate control (55%) of chickweed and insignificant control of knotweed and fool's-parsley, 1.12 kg/ha gave 100% chickweed and speedwell control, 58% knotweed and 59% fool's-parsley control, 2.24 kg/ha gave 100% control of chickweed and speedwell, 93% of fool's-parsley and 79% control of knotweed; no significant effect on maize yield
COMMENTS: Postemergence applications generally less effective than preemergence treatments; results also given of effectiveness of herbicide combinations
REFERENCE: Ludwig, J.W., "The Use of a Low Dose of Atrazine Alone and in Mixtures with Other Herbicides in the Maize Crop," Weed Res. 13:12-18 (1973).

<5102>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 2.0 to 16.0 lb/A
APPLICATION METHODS: Added to soil and mixed
EXPERIMENTAL CONDITIONS: Germination chamber; temperature--75 F (day) and 72 F night; paper carton culture; soil--Plainfield sand; evaluation time--up to 54 da
EFFECTS: No effect on germination and kill of seedlings at 16 lb/A
COMMENTS: Seed germination influenced only very slightly, or not at all, by variety of soil-incorporated herbicides; in contrast, all but one of soil-incorporated herbicides caused seedling mortality and decreased dry-weight production of seedlings; greatest toxicity observed at highest dosages used; EPTC and CDAA at high dosages very toxic to tree seedlings, whereas DCPA showed no deleterious effects at any dosage
REFERENCE: Kozlowski, T.T. and J.H. Torrie, "Effect of Soil Incorporation of Herbicides on Seed Germination and Growth of Pine Seedlings," Soil Sci. 100(2):139-146 (1965).

<5103>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence applications principally, but some postemergence applications (alachlor, cyprazine, and cyanazine); 60 gal/A; 40 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1970 to 1972
EFFECTS: Effective control of yellow foxtail; slight-moderate control of other grasses
COMMENTS: Preemergence herbicides which controlled large crabgrass also controlled fall panicum; these included: alachlor, linuron, cyanazine and prynachlor; herbicides which did not control large crabgrass and fall panicum included atrazine, cyprazine and dicamba
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

<5104>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A; 80% WP
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: Effective control of pigweed; moderate control of grasses; no adverse effects on corn in pre- and postemergence applications of either rate
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<5105>
<5105>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Broadleaf weeds; Grasses; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A; WP
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Sassafras loam
EFFECTS: Effective control of broadleafs and moderate control of grass weeds with no adverse effect on corn
COMMENTS: Effective combinations were alachlor + atrazine, prynachlor + atrazine, chlorbromuron + atrazine, and chlorbromuron + simazine; atrazine slightly more effective than simazine
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

<5106>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Horseweed (CONYZA CANADENSIS); Knotweed (POLYGONUM sp.); Lespedeza, sericea (LESPEDEZA CUNEATA); Lettuce, tall (LACTUCA CANADENSIS); Blackberry (RUBUS sp.); Goldenrod (SOLIDAGO sp.); Aster (ASTER sp.); Sycamore, American (PLANTANUS OCCIDENTALIS)
EXPERIMENTAL DOSE: 4.5 and 9.0 kg/ha
APPLICATION METHODS: Preemergence application with 80% WP
EXPERIMENTAL CONDITIONS: Fertile bottomland; 1580 sycamore seedlings/ha hand planted; plots of 0.04 ha established; 5 replications of each treatment in May; 3 year study
EFFECTS: 93% weed control at 4.5 kg/ha and 95% at 9.0 kg/ha through June, decreased to 57 and 64% respectively by August; minor phytotoxic symptoms to sycamores-leaf bronzing, curling, and necrosis; about 65% sycamore survival at 9.0 kg/ha and approximately 72% at 4.5 kg/ha; increased height, diameter, and volume of growth of trees on treated plots
COMMENTS: Weed control not improved by increasing dosage; phototoxicity to sycamore was not considered serious; residual weed control not very significant the second and third years; first year weed control enables establishment and maintenance of sycamores, 60 to 70% weed control is effective for tree growth
REFERENCE: Fitzgerald, C.H., R.F. Richards, C.W. Selden, and J.T. May, "Three Year Effects of Herbaceous Weed Control," Weed Sci. 23(1):32-35 (1975).

<5107>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Yam (DIOSCOREA sp.); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed (AMARANTHUS DUBIUS); Painted-leaf (EUPHORBIA HETEROPHYLLA); Junglerice (ECHINOCHLOA COLONUM); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.12, 3.36, and 10.10 kg/ha
APPLICATION METHODS: Preemergence application delivered in 340 l./ha of water
EXPERIMENTAL CONDITIONS: Heavy clay soil; randomized complete block design with 4 to 8 replications; spring or summer planting
EFFECTS: 1.12 kg/ha--unsatisfactory weed control; rates that gave weed control longer than 8 wk gave crop injury
COMMENTS: Crop injury in all trials and some reduction in tuber yield; flaming before crop emergence reduced weed density except for nutsedge
REFERENCE: Gaskins, M.H. and H. Delpin, "Weed Control in New Plantings of Steroid-Producing DIOSCOREA Species," Weed Sci. 21(3):263-265 (1973).

<5108>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Bermudagrass (CYNODON sp.); Goosegrass (ELEUSINE INDICA)
EXPERIMENTAL DOSE: 1.68 kg/ha
APPLICATION METHODS: Postemergence spray; 374 l./ha; 0.2% non-ionic surfactant; MSMA applied up to 3X at one week intervals
EXPERIMENTAL CONDITIONS: Field study; soil--Vertic Ustropets (Waipahu silty clay)
EFFECTS: Slight initial damage to bermudagrass and very slight damage to goosegrass
COMMENTS: Excellent goosegrass control obtained when s-triazine herbicides used, followed by two or three applications of MSMA; three applications of MSMA alone ineffective in controlling mature goosegrass; no phytotoxicity observed from any herbicide treatment on common bermudagrass; Tifgreen discolored by all herbicide treatments, however, the injury was of short duration
REFERENCE: Murdoch, C.L. and D. Ikeda, "Goosegrass Control in Bermudagrass Turf with Combinations of MSMA and S-Triazines," Agron. J. 66:712-714 (1974).

<5109>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Smutgrass (SPOROBOLUS POIRETII); Bermudagrass, common (CYNODON DACTYLON); Carpetgrass (AXONOPUS AFFINS)
EXPERIMENTAL DOSE: 2.2, 4.4, 6.7 and 9.0 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l./ha; one, two, or three applications
EXPERIMENTAL CONDITIONS: Field study; soil--Tifton loamy sand; warm and cool weather applications studied; evaluation time--6 to 12 wk
EFFECTS: Effective control of smutgrass at 2.2 kg/ha (two applications in warm weather) and at 6.7 - 9.0 kg/ha (single applications in cool weather); no permanent injury
COMMENTS: MSMA applied alone or in combination with 2,4-D in each of three applications controlled at least 70% of smutgrass in two of three experiments; common bermudagrass showed signs of atrazine injury during first 6 weeks after treatment but injury not evident following year; MSMA alone or in combination with 2,4-D killed carpetgrass in all experiments
REFERENCE: Johnson, B.J., "Smutgrass Control with Herbicides in Turfgrasses," Weed Sci. 23(2):87-90 (1975).

<5110>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Preemergence and postemergence applications; EC, WP, and oil additive formulations; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (15-10-10) and diazinon (40 lb/A) applied before disking
EFFECTS: EC formulation slightly more effective in preemergence application than WP; oil addition provided no consistent advantage over WP in postemergence application; 2.0 lb/A preemergence applications were about as effective as 3.0 lb/A
COMMENTS: Combination preemergence or postemergence treatments about as effective as herbicides alone
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<5111>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Panicum, fall (PANICUM DICHOTOMIFLORUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold sandy loam; evaluation time--approx. 2 mos; corn harvested at maturity for yield data
EFFECTS: Moderate to effective control of all weeds except fall panicum; slight or no effect on corn varieties
COMMENTS: Seneca Chief most susceptible variety to yield reductions particularly from poorer herbicide treatments; all varieties showed injury from metribuzin; the best herbicide treatment was alachlor + MC 4379 80W
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "The Response of Several Sweet Corn Varieties to Various Herbicides and Herbicide Combinations," Proc. Northeast. Weed Sci. Soc. 28:175-181 (1974).

<5112>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Grasses
EXPERIMENTAL DOSE: 1.1 and 2.2 kg/ha
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Field study; soil--Brookston clay loam; time period--1970 to 1972
EFFECTS: Moderate control of grasses at 2.2 kg/ha
COMMENTS: Triazine and urea herbicides reduced sucrose level of seedlings of barnyardgrass and yellow foxtail compared with their effectiveness in controlling these weeds by pre-emergence application to maize; in 2 years out of 3, a significant positive correlation obtained between sucrose content of the third leaf and number of these grasses on field plots 2 months after planting
REFERENCE: Marriage, P. B. and W. J. Saidak, "Control of Barnyardgrass and Yellow Foxtail by Herbicides in Relation to the Sucrose Content of the Seedling Leaves," Weed Res. 14(2):115-118 (1974).

<5113>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 2.24, 4.48, and 6.72 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; application one day after sowing; time period -- 1969 to 1971
EFFECTS: At all rates, moderate to effective control of weeds with no adverse effect on corn yield
COMMENTS: Atrazine, and lasso found on par with hand weeding as far as grain yields concerned; atrazine found to control broad spectrum of weeds compared to other herbicides; tafazine 50W effective in controlling weeds but grain yields depressed
REFERENCE: Singh, D.J.C., V.L. Hall, and K.N. Rao, "Weed Control in Maize by Herbicides," The Andhra Agric. J. 18(3):91-94 (1971).

<5114>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Bromegrass, smooth (BROMUS INERMIS); Grama, sideoats (BOUTELOUA CURTIPENDULA); Indian grass (SORGHASTRUM NUTANS); Switchgrass (PANICUM VIRGATUM); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.1, 3.4, and 7.8 kg/ha
APPLICATION METHODS: Postemergence spray; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Sharpsburg silty clay loam; forage grasses treated and soil at different depths (0-8, 8-15, and 15-30 cm) removed at different times (4 and 16 mos) for greenhouse bioassay using soybean
EFFECTS: Generally reduced growth of soybeans in soil only from 0-8 cm depth and at highest rates with no adverse effect on switchgrass, sideoats grams, and indiangrass and visible injury to smooth brome at 7.8 kg/ha
COMMENTS: Most herbicide residues 4 or 16 months after application located in the 0- to 8-cm soil depth; only bromacil, or terbacil at high rates depressed soybean growth in soil from the 8- to 15-cm depth
REFERENCE: Morrow, L.A. and M.K. McCarty, "Selectivity and Soil Persistence of Certain Herbicides Used on Perennial Forage Grasses," J. Envir. Qual. 5(4):462-465 (1976).

<5115>
<5115>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Pea, sweet (PISUM SATIVUM); Amaranth (AMARANTHUS VIRIDIS); (DIGERA ARVENSIS); (BOERHAAVIA DIFFUSA); (BOERHAAVIA REPANDA); Dayflower (COMMELINA BENGHALENSIS); (PENNISETUM TYPHOIDES); Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0, 10.0, and 100 ppm
APPLICATION METHODS: Postemergence spray to runoff
EXPERIMENTAL CONDITIONS: Greenhouse study (presumed); pot culture
EFFECTS: Moderate to severe damage to all plants except B. DIFFUSA and A. VIRIDIS (slight damage)
COMMENTS: Triazine and urea herbicides caused appreciable stimulation of stomatal opening within two hours; amides caused rapid closure of open stomata; thiocarbamates exhibited differential response
REFERENCE: Rama Das, V.S. and M. Santakumari, "Stomatal Behaviour Towards Four Classes of Herbicides as a Basis of Selectivity to Certain Weeds and Crop Plants," Proc. Indian Acad. Sci. 82B(3):108-116 (1975).

<5116>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, giant (SETARIA FABERI); Foxtail, yellow (SETARIA GLAUCA); Foxtail, green (SETARIA VIRIDIS); Cupgrass, hairy (SETARIA FABERI); Foxtail, robust purple (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 0.56, 1.12, and 2.24 kg/ha
APPLICATION METHODS: Soil addition; preplant spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; soil--Plano silt loam; temperature--26 C
EFFECTS: Calculated 50% effective dose was 0.32-1.02 kg/ha with high correlation between herbicidal effect (dry wt loss) and seed weight
COMMENTS: All four herbicides provided acceptable control for barnyardgrass, giant foxtail, green foxtail, robust-purple foxtail, and yellow foxtail; susceptibility of grasses to cyanazine and alachlor correlated with seed size; alachlor more effective in controlling green foxtail and hairy cupgrass when applied to the soil surface before emergence than when incorporated into soil prior to sowing
REFERENCE: Harvey, R.G., "Susceptibility of Seven Annual Grasses to Herbicides," Weed Res. 14(1):51-55 (1974).

<5117>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Alfalfa (MEDICAGO SATIVA); Cabbage (BRASSICA OLERACEA); Lettuce (LACTUCA SATIVA); Beet, sugar (BETA VULGARIS); Soybean (GLYCINE MAX); Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1.8 kg/ha
APPLICATION METHODS: Soil incorporation; disking to 15 cm depth
EXPERIMENTAL CONDITIONS: Field study; herbicides applied at six-month intervals at two locations; soils--Mesa and Yuma, AZ; crops planted at 24, 18, 12, 6, and 0 intervals after herbicide applications; residual effects studied after fallow periods
EFFECTS: Persisted up to 24 mos and adversely affected stand or fresh weight yield of alfalfa, lettuce, and sugarbeet; 18 mos persistence effects noted on cabbage and soybean; sorghum affected only when planting made immediately after application (0 mos)
COMMENTS: Herbicides can persist for 2 years or more in fallow desert soils and affect susceptible crops; considerable differences observed with two soil types; considerable differences in crop susceptibility
REFERENCE: Hamilton, K.C. and H.F. Arle, "Persistence of Herbicides in Fallow Desert Cropland," Weed Sci. 20(6):573-576 (1972).

<5118>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Corn (ZEA MAYS); Wheat (TRITICUM AESTIVUM); Plants
EXPERIMENTAL DOSE: 1.0, 1.5, and 2.0 kg/ha
APPLICATION METHODS: Preemergence application; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; clay-loam calcareous soil; pH--8.0 to 8.4; band and blanket (broadcast) applications compared
EFFECTS: Better weed control and higher corn crop yields than hand-weeding; phytotoxic residue carryover was less with band application and also better for corn and wheat production; blanket application resulted in some damage to wheat (residue carryover)
COMMENTS: Optimum atrazine application rate varied with time of planting and method of application
REFERENCE: Gupta, O.P. and B.K. Dhupia, "Efficacy of Atrazine in Maize Planted on Different Dates as Affected by Its Residual Phytotoxicity under Varying Levels and Methods of Its Application," Indian J. Agric. Sci. 41(3):221-227 (1971).

<5119>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Quackgrass (AGROPYRON REPENS); Orchard grass (DACTYLIS GLOMERATA); Bluegrass, Kentucky (POA PRATENSIS); Dandelion, common (TARAXACUM OFFICINALE); Crabgrass, large (DIGITARIA SANGUINALIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Postemergence in water at 40 gpa
EXPERIMENTAL CONDITIONS: Woodbridge fine sandy loam; 2 tons/A lime and 800 lb/A 15-15-15 fertilizer applied April 17, corn seeded May 22; 9 by 30 ft plot; herbicide treatments April 24 when grass growth just starting and May 27 when grass was 10 to 12 inches tall; field experiments; above average rainfall
EFFECTS: Good crabgrass control; poor dandelion control; poor to moderate control of other species in September and June respectively
COMMENTS: No April 24 treatment; combinations with other herbicides also tested; no reported corn injury
REFERENCE: Peters, R.A. and W.M. Dest, "Glyphosate for Perennial Sod Kill in No-Tillage Corn," Proc. Northeast. Weed Sci. Soc. 27:1-6 (1973).

<5120>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7)M
APPLICATION METHODS: Drench to seedlings
EXPERIMENTAL CONDITIONS: Seedlings germinated in dark in vermiculite containing 20 mg/l. streptomycin sulfate at 30 C; drench applied 6 to 24 hr before harvest, excess drained within 5 min after treatment; chromatin isolated from corn roots and from soybean seedlings
EFFECTS: 10(-4), 10(-5), and 10(-6)M applied to 4-day-old etiolated soybean 6 hr before chromatin isolation enhanced RNA synthesis 16, 65, and 40% respectively; 10(-7)M had no effect on RNA synthesis; 10(-5)M caused greater enhancement when applied more than 6 hr before harvest; 10(-5)M applied to corn 6 hr before harvest had no enhancement of RNA synthesis, inhibitory effect observed if applied 12 hr before corn harvest
COMMENTS: Enhancement in soybean--possibly involves a de-repression of transcription by increasing template availability
REFERENCE: Penner, D. and R.W. Early, "Effect of Atrazine on Chromatin Activity in Corn and Soybean," Weed Sci. 20(4):367-370 (1972).

<5121>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Addition to soil, mixed by blending 5 or 10 min.
EXPERIMENTAL CONDITIONS: Greenhouse study; flat culture; daily watering; evaluation time--7 wk; inhibition studied at 5 to 30 C
EFFECTS: Reduced growth especially at 25 to 30 C
COMMENTS: High temperature greatly accelerated herbicide toxicity, but effects of temperature varied greatly among herbicides; atrazine and simazine more toxic than other herbicides tested at all temperatures; toxicity of simazine and atrazine apparent early, whereas effects of propazine, prometryne, prometone, and ipazine somewhat delayed
REFERENCE: Kozlowski, T.T., S. Sasaki, and J.H. Torrie, "Influence of Temperature on Phytotoxicity of Triazine Herbicides to Pine Seedlings," Amer. J. Bot. 54(6):790-796 (1967).

<5122>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 40.0 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Little or no effect
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most common phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<5123>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS); (PHYLLANTHUS AMARUS); Corn (ZEA MAYS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); (PANICUM ZIZANOIDES); Morningglory (IPOMOEA sp.); Bermudagrass, common (CYNODON DACTYLON); (KALLSTROEMIA MAXIMA); (SORGHUM VERTICILLIFLORUM)
EXPERIMENTAL DOSE: 3 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Clay loam soil; field tests
EFFECTS: 71% maize yield compared to clean-weeded control; moderate overall weed control--grasses poorly controlled
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<5124>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Ginger (ZINGIBER OFFICINALE); (ACHYRANTHES INDICA); Spurge (EUPHORBIA sp.); Nutsedge, purple (CYPERUS ROTUNDUS); (PHYLLANTHUS AMARUS); (SORGHUM VERTICILLIFLORUM); (KALLSTROEMIA MAXIMA); Windmill grass (CHLORIS RADIATA)
EXPERIMENTAL DOSE: 2.2 kg/ha
EXPERIMENTAL CONDITIONS: Single trial
EFFECTS: Herbicide safe to yellow ginger; good weed control to nine weeks
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<5125>
<5125>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<5126>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<5127>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Corn (ZEA MAYS); Nutsedge, yellow (CYPERUS ESCULENTUS); Foxtail, giant (SETARIA FABERI); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Mattapex silt loam; time period--1974 and 1975
EFFECTS: At 2.0 lb/A, effective weed control with slight initial damage of corn but no adverse effect on yield
COMMENTS: Best control of weed species achieved with combination of materials; only RP-20630 and RP-15018, at high rates, caused corn injury and reduced yields
REFERENCE: Parochetti, J.V., G.W. Burt, and A.W. Bell, "Triazines, Acetanilides, and Several Other Herbicides for Weed Control in Corn," Proc. N.E. Weed Sci. Soc. 30:48-54 (1976).

<5128>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Plants; Lotus (LOTUS PEDUNCULATUS)
EXPERIMENTAL DOSE: 0.6, 1.1 and 1.7 kg/ha
APPLICATION METHODS: Preemergence spray; 560 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Tokomaur silt loam, time period--1974 and 1975
EFFECTS: Effective weed control but death of lotus
COMMENTS: Dinoseb most effective of 6 pre-emergence herbicides tested and 2,4-DB best of 5 postemergence herbicides; crop showed no tolerance towards atrazine, cyanazine, metribuzin, or bentazone
REFERENCE: Ivens, G.W., "Preliminary Evaluation of Pre- and Post-Emergence Herbicides in "Maku" Lotus," Proc. 28th. New Zealand Weed and Pest Cont. Conf. 28:31-34 (1975).

<5129>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Watergrass; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 3.0 to 12.0 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) spray
EXPERIMENTAL CONDITIONS: Field study; two CA locations; soils--Burns silty clay loam and Egbert muck; time period--1960 and 1961
EFFECTS: At 6.0 lb and higher rates, effective control of watergrass and no adverse effect on corn
COMMENTS: Chemicals incorporated in soil as preemergence treatments gave satisfactory control of watergrass and many broadleaved weeds in corn growing in organic soils of Sacramento-San Joaquin Delta; eptam, tillam, atrazine and Randox-T all potentially useful chemicals
REFERENCE: Foy, C.L., T. Lyons, and S.P. Carlson, "Controlling Watergrass in Corn," Calif. Agric. 16(3):12-14 (1962).

<5130>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da

<5130> CONT.
EFFECTS: Severe damage or kill of all species except corn (slight) at 4.0 lb/A
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5131>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Grasses; Broadleaf weeds; Maple, amur (ACER GINNALA); Euonymus, Japanese (EUONYMUS FORTUNEI); Goldenbells (FORSYTHIA INTERMEDIA); Juniper, common (JUNIPERUS COMMUNIS); Pine, red (PINUS RESINOSA); Oak, pin (QUERCUS PALUSTRIS); Rose (ROSA WICHURAIANA); Lilac (SYRINGA VULGARIS); Yew, upright (TAXUS CUSPIDATA); Periwinkle, common (VINCA MINOR)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Postplanting spray; 30 gal/A at 30 lb/sq in
EXPERIMENTAL CONDITIONS: Field study; soil--Stoy silt loam; application one week after planting in winter; time period--1961 and 1962
EFFECTS: Effective weed control at 2.0 lb/A with moderate to severe damage to all woody plants except EUONYMUS, FORSYTHIA, JUNIPER, PINUS, and TAXUS (no or slight damage)
COMMENTS: Effective weed control, lasting until June of following year obtained with atrazine, CIPC, kloben, simazine, lorox, ametryne, and prometryne; atrazine, kloben and simazine gave nearly 100% control; atrazine caused plant injury with more dead plants in treated plots than in control planting; simazine and kloben safer materials
REFERENCE: Sherwood, L.V. and H.R. Kemmerer, "The Influence of Winter Applied Preemergence Herbicides on Weed Growth among Woody Ornamental Plants," Am. Soc. Hort. Sci. 85:657-662 (1964).

<5132>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Rose, wild (ROSA sp.); Plants
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Postemergence
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At higher rate, chlorosis of rose and effective weed control
COMMENTS: Terbacil, atrazine, propachlor, and aziprotryne gave satisfactory weed control except last two which failed to control cruciferous weeds
REFERENCE: Roberts, L. and D.C. Harris, "Use of Terbacil, Atrazine and Other Herbicides in Bush Rose Production," Proc. 11th. Br. Weed Cont. Conf. 11(2):632-634 (1972).

<5133>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Freehold sandy loam
EFFECTS: Effective control of broadleafs with slight control of grass weeds and no adverse effect on corn yield
COMMENTS: Combinations of alachlor and atrazine, alachlor and simazine, and alachlor and cyanazine resulted in better control of fall panicum than single treatments of atrazine, simazine, or cyanazine; best overall control obtained with alachlor
REFERENCE: Herman, D.J. and R.D. Ilnicki, "Weed Control in Corn by Alachlor and Prynachlor in Combination with Some S-Triazine Herbicides," Proc. Northeast. Weed Sci. Soc. 27:41-46 (1973).

<5134>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Slight control of panicum and effective control of remaining weeds with slight adverse effect on corn
COMMENTS: Penoxalin in combination with atrazine improved control of velvetleaf; control of lambsquarters and pigweed only slightly better than either herbicide applied alone; penoxalin in combination with cyanazine greatly improved control of lambsquarters, velvetleaf, and panicum with no appreciable increase in control of pigweed
REFERENCE: Ilnicki, R.D. and R.W. Michieka, "Penoxalin Alone and in Combination with Atrazine, Cyanazine, and BH-5205 for Weed Control in Corn," Proc. Northeast. Weed Sci. Soc. 31:6-10 (1977).

<5135>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam

<5135>
<5135> CONT.
EFFECTS: Effective control of all weeds except panicum and no adverse effect on corn
COMMENTS: VEL 5052 not effective on lambsquarters or common ragweed; buthiazole (VEL 5026) very effective on fall panicum; combinations of VEL 5052 with buthiazole or atrazine effected excellent control of many annual weeds; combinations of buthiazole with alachlor produced excellent control of many weeds
REFERENCE: Ilnicki, R.D. and R.W. Michieka, "Weed Control in Corn with VEL 5052 and Buthiazole (VEL 5026) Applied Alone, and in Combination with Atrazine and Alachlor," Proc. Northeast. Weed Sci. Soc. 31:15-19 (1977).

<5136>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Goosegrass (ELEUSINE INDICA); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed (AMARANTHUS sp.); Marigold (TAGETES MINUTA)
EXPERIMENTAL DOSE: 1.26 and 2.40 kg/ha
APPLICATION METHODS: Preemergence spray; 250 l./ha; combined applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective control of all weeds except CYPERUS (no adverse effect)
COMMENTS: Formulation gave wide spectrum selective weed control in maize with residual action of up to 12 weeks on most weeds; shallow cultivation up to 6 weeks after application did not materially affect residual action
REFERENCE: Jooste, J.W. and J.J. Van Biljon, "Metolachlor + Atrazine a Combination Pre-Emergence Herbicide for Broad Spectrum Weed Control in Maize," Crop Protect. 5:85-90 (1976).

<5137>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Atrazine
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time--11 da
EFFECTS: Minimum lethal concentration 6.21 to 4.36 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5138>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-methyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: G-30026
PLANT: Pine, red (PINUS RESINOSA); Purslane, common (PORTULACA OLERACEA); Carpetweed (MOLLUGO VERTICILLATA); Weeds
EXPERIMENTAL DOSE: 0.5, 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Postemergence spray--one quart to each plot
EXPERIMENTAL CONDITIONS: Pine stock--spring 1960 germination (1-0 stock), spring 1959 germination (2-0 stock), and spring 1958 germination (2-1 stock); randomized complete block design, 4 by 2.7 ft plots; field studies; Plainfield sand soil
EFFECTS: 1-0 stock--weed reduction significant at all but 0.5 lb/A with no data at 4.0 lb/A; tree seedling survival and dry weight significantly reduced at 2.0 lb/A with no data for 4.0 lb/A; 2-0 stock--seedling dry weight significantly reduced only at 4.0 lb/A
COMMENTS: Weed infestation slight; weeds not tabulated separately
REFERENCE: Winget, C.H., T.T. Kozlowski, and J.E. Kuntz, "Effects of Herbicides on Red Pine Nursery Stock," Weeds 11(2):87-90 (1963).

<5139>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-methyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Norazine
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious soybean, cotton, and crabgrass injury but moderate sorghum and minor corn injury at 1.5 lb/A, moderate soybean, cotton, and crabgrass injury at 0.5 lb/A; preemergence subsurface--same results as surface treatment except serious injury to soybean and cotton also at 0.5 lb/A; postemergence--moderately serious crabgrass injury
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5140>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N-methyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: G-30026
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time--11 da
EFFECTS: Minimum lethal concentration 5.91 to 4.36 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5141>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N-diethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Ipazine
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 2.0 to 16.0 lb/A
APPLICATION METHODS: Added to soil and mixed
EXPERIMENTAL CONDITIONS: Germination chamber; temperature--75 F (day) and 72 F night; paper carton culture; soil--Plainfield sand; evaluation time--up to 54 da
EFFECTS: No effect on seed germination but reduced seedling growth
COMMENTS: Seed germination influenced only very slightly, or not at all, by variety of soil-incorporated herbicides; in contrast, all but one of soil-incorporated herbicides caused seedling mortality and decreased dry-weight production of seedlings; greatest toxicity observed at highest dosages used; EPTC and CDAA at high dosages very toxic to tree seedlings, whereas DCPA showed no deleterious effects at any dosage
REFERENCE: Kozlowski, T.T. and J.H. Torrie, "Effect of Soil Incorporation of Herbicides on Seed Germination and Growth of Pine Seedlings," Soil Sci. 100(2):139-146 (1965).

<5142>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N-diethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Ipazine
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.5 to 6.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: No control of weeds or adverse effect on cotton
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<5143>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N-diethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Ipazine
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious injury at 1.5 lb/A only to soybean, minor injury to corn and sorghum at 1.5 lb/A, moderate injury to cotton and crabgrass at 1.5 lb/A, moderate injury to crabgrass and soybean at 0.5 lb/A and minor injury to others at 0.5 lb/A; preemergence subsurface--injury somewhat more pronounced than surface treatment; postemergence--moderate crabgrass injury at 2.0 lb/A
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5144>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N-diethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Ipazine
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Addition to soil, mixed by blending 5 or 10 min.
EXPERIMENTAL CONDITIONS: Greenhouse study; flat culture; daily watering; evaluation time--7 wk; inhibition studied at 5 to 30 C
EFFECTS: Reduced growth especially at 25 to 30 C
COMMENTS: High temperature greatly accelerated herbicide toxicity, but effects of temperature varied greatly

<5144>
<5144> CONT.
among herbicides; atrazine and simazine more toxic than other herbicides tested at all temperatures; toxicity of simazine and atrazine apparent early, whereas effects of propazine, prometryne, prometone, and ipazine somewhat delayed
REFERENCE: Kozlowski, T.T., S. Sasaki, and J.H. Torrie, "Influence of Temperature on Phytotoxicity of Triazine Herbicides to Pine Seedlings," Amer. J. Bot. 54(6):790-796 (1967).

<5145>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N-diethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Ipazine
PLANT: Waterweed (ELODEA CANADENSIS); Naiad, Southern (NAJAS GUADALUPENSIS); Coontail (CERATOPHYLLUM DEMERSUM); Alligatorweed
EXPERIMENTAL DOSE: 5.0 and 20.0 lb/A; EC and ester
APPLICATION METHODS: Addition by syringe to water containing test species (submersed species) and spray (100 gal/A at 20 psi)
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--80 F; light intensity--60 to 80 ft c; photoperiod--10 hr; evaluation time--2 to 8 wk with continuous and varied (0.5 to 336 hr) contact
EFFECTS: At 5.0 and 20.0 lb rates, moderate weed control
COMMENTS: Among 75 herbicides evaluated on three species of submersed weeds only diquat, endothal, and acrolein gave 85% or better control at 1 ppmw in still-water tests; only acrolein and endothal effective on submersed weeds at 1 ppmw in limited-exposure test; evaluation of 17 herbicides on three species of floating aquatic weeds indicated diquat effective
REFERENCE: Blackburn, R.D., "Evaluating Herbicides Against Aquatic Weeds," Weeds 11(1):21-24 (1963).

<5146>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N-diethyl-N'-(1-methylethyl)-
CHEMICAL COMMON NAME: Ipazine
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time--11 da
EFFECTS: Minimum lethal concentration 6.21 to 3.86 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5147>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N,N',N'-tetraethyl-
CHEMICAL COMMON NAME: Chlorazine
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.28 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5148>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Propazine
PLANT: Plants;Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1.5 kg/ha
APPLICATION METHODS: Preemergence spray, 50% WP
EXPERIMENTAL CONDITIONS: Field study; evaluation time--14, 35, and 75 days; time period--1964 and 1965
EFFECTS: Effective control of weeds with no adverse effect on sorghum
COMMENTS: Preemergence application of triazines effected early weed control, which lasted for about 10 weeks; crop growth and grain yield under the chemical treatments were favourable
REFERENCE: Chadhokar, P.A. and V.S. Mani, "Effect of Herbicides on Weed Control and Grain Production in Sorghum," Indian J. Agric. Sci. 42(7):610-613 (1972).

<5149>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Propazine
PLANT: Castorbean, volunteer (RICINUS COMMUNIS); Cotton (GOSSYPIUM HIRSUTUM); Sorghum, grain (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1.1, 1.7, and 2.2 kg/ha
APPLICATION METHODS: Preplant and preemergence sprays; 188 l/ha
EXPERIMENTAL CONDITIONS: Field study; soil--clay loam; time period--1968 to 1970
EFFECTS: Moderate control of castorbean (results varied from slight to effective control) in both applications with no adverse effect on crops

<5149> CONT.
COMMENTS: Volunteer castorbean most effectively controlled by preemergence application of propazine in grain sorghum and by fluometuron in cotton; preplant applications of propazine not as effective as preemergence treatments.
REFERENCE: Smith, D.T., A.W. Cooley, D.O. Mooney, and A.F. Wiese, "Herbicidal Control of Volunteer Castorbean," Weed Sci. 20(4):338-340 (1972).

<5150>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Propazine
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect at any application rates
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<5151>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Propazine
PLANT: Flax (LINUM USITATISSIMUM); Beet, sugar (BETA VULGARIS); Buckwheat (FAGOPYRUM ESCULENTUM)
EXPERIMENTAL DOSE: 0.4 and 0.8 mg/100 g soil
APPLICATION METHODS: Additi . to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--20 to 23 C (day) and 15 to 17 C (night); RH--60 to 85%; evaluation time--up to 28 da
EFFECTS: Reduced growth
COMMENTS: Triazine herbicides exerted increasing inhibitory effect on dry and fresh weight yields, transpiration, and growth of seedlings of flax, beet and buckwheat; enhanced accumulation of free amino acids and decrease of simple sugar values noted in aboveground parts of test plants; results interpreted as secondary effects of inhibitory action of triazines on plant photosynthesis; toxicity of tested chemicals to flax, beet, and buckwheat decreased in following order: atrazine, simazine, propazine, atratone, prometone and prometryne; flax more resistant to triazines than beets and buckwheat
REFERENCE: Ploszynski, M. and H. Zurawski, "The Phytotoxic Action of Triazine Herbicides on Flax, Beets, and Buckwheat Seedlings, and Some Physiological Changes Connected With It," Acta Agrobot. 24(2):206-215 (1971).

<5152>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Propazine
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 2.0 to 16.0 lb/A
APPLICATION METHODS: Added to soil and mixed
EXPERIMENTAL CONDITIONS: Germination chamber; temperature--75 F (day) and 72 F night; paper carton culture; soil--Plainfield sand; evaluation time--up to 54 da
EFFECTS: No effect on germination but significantly reduced growth at 4 to 16 lb/A and death at 16 lb/A
COMMENTS: Seed germination influenced only very slightly, or not at all, by variety of soil-incorporated herbicides; in contrast, all but one of soil-incorporated herbicides caused seedling mortality and decreased dry-weight production of seedlings; greatest toxicity observed at highest dosages used; EPTC and CDAA at high dosages very toxic to tree seedlings, whereas DCPA showed no deleterious effects at any dosage
REFERENCE: Kozlowski, T.T. and J.H. Torrie, "Effect of Soil Incorporation of Herbicides on Seed Germination and Growth of Pine Seedlings," Soil Sci. 100(2):139-146 (1965).

<5153>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Propazine
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Addition to soil, mixed by blending 5 or 10 min.
EXPERIMENTAL CONDITIONS: Greenhouse study; flat culture; daily watering; evaluation time--7 wk; inhibition studied at 5 to 30 C
EFFECTS: Reduced growth especially at 25 to 30 C
COMMENTS: High temperature greatly accelerated herbicide toxicity, but effects of temperature varied greatly among herbicides; atrazine and simazine more toxic than other herbicides tested at all temperatures; toxicity of simazine and atrazine apparent early, whereas effects of propazine, prometryne, prometone, and ipazine somewhat delayed
REFERENCE: Kozlowski, T.T., S. Sasaki, and J.H. Torrie, "Influence of Temperature on Phytotoxicity of Triazine Herbicides to Pine Seedlings," Amer. J. Bot. 54(6):790-796 (1967).

<5154>
<5154>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Propazine
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.29 to 3.65 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5155>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Plants;Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1.5 kg/ha
APPLICATION METHODS: Preemergence spray; 50% WP
EXPERIMENTAL CONDITIONS: Field study; evaluation time--14, 35, and 75 days; time period--1964 and 1965
EFFECTS: Moderate to effective control of weeds with no adverse effect on sorghum
COMMENTS: Preemergence application of triazines effected early weed control, which lasted for about 10 weeks; crop growth and grain yield under the chemical treatments were favourable
REFERENCE: Chadhokar, P.A. and V.S. Mani, "Effect of Herbicides on Weed Control and Grain Production in Sorghum," Indian J. Agric. Sci. 42(7):610-613 (1972).

<5156>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazin
PLANT: Canarygrass, reed (PHALARIS ARUNDINACEA)
EXPERIMENTAL DOSE: 0.28-1.12 kg/ha
APPLICATION METHODS: Postemergence spray; single and split (2) applications
EXPERIMENTAL CONDITIONS: Soil pH--6.1; limestone applied--2.24 and 4.48 m ton/ha; nitrogen applied--2.24 and 4.48 N/ha; phosphorus applied--51 kg/ha; potassium applied 195 kg/ha; time--30 to 90 day
EFFECTS: Nutritive value of reed canarygrass improved depending on rate and method of application; roughage (dry matter) reduced; percent crude protein, dry matter digestibility, alcohol-soluble and nitrate nitrogen increased; cell wall components decreased
COMMENTS: Subherbicidal application rates applied; overall yields not affected but composition of harvested forage (canarygrass) was
REFERENCE: Allison, D.W., "Influence of Simazin on Yield and Quantity Components of Reed Canarygrass," Agron. J. 64(1):530-535 (1972).

<5157>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Plants; Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Posttransplant (same day)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--aprox. 3 mos
EFFECTS: Effective control of weeds but death of chrysanthemums
COMMENTS: Excellent weed control obtained with number of herbicides; only R-7465 and diphenamid used as soil surface treatments and bensulide gave unsatisfacotry control; various herbicide treatments found to affect growth of chrysanthemum plants to different degrees
REFERENCE: Welker, W.V. and J.C. Cialone, "An Evaluation of Herbicides for the Control of Weeds in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 26:51-54 (1972).

<5158>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Quackgrass (AGROPYRON REPENS); Nutsedge, yellow (CYPERUS ESCULENTUS); Lamb's-quarters (CHENOPODIUM ALBUM); Yew, upright (TAXUS CUSPIDATA); Chickweed, common (STELLARIA MEDIA); Horseweed (ERIGERON CANADENSIS); Vetch, bird (VICIA CRACCA); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Carpetweed (MOLLUGO VERTICILLATA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 3 and 6 lb/A
APPLICATION METHODS: Formulation -- 80% WP and 4% G; granules applied with auger-feed machine calibrated for each treatment; sprays applied with hand-held boom to deliver 50 gal/A
EXPERIMENTAL CONDITIONS: Yews (5 years old) spaced at 2 foot intervals in rows 3 feet apart; herbicides applied on December 1, 1970 and again on December 9, 1971; soil was moist and 39 degrees F at 3 inch depth at 1970 treatment, air temperature was 45 degrees F; December 1971 application-- 1 to 3 inches snow on ground and air temperature 39 degrees F.
EFFECTS: Quackgrass, nutsedge, bird vetch, and other weeds tested, successfully controlled; first growing season, 6 lb/A WP suppressed nutsedge; second growing season, 3 lb/A G gave better nutsedge control than wettable powder; granular simazine controlled annual weeds longer than wettable powder; 6 lb/A simiazine provided more effective control of bird vetch than other herbicides tested; yews showed no appreciable

<5158> CONT.
injury
COMMENTS: Excessive rainfall second growing season accelerated herbicide leaching; results of weed control with combinations of herbicides reported
REFERENCE: Ahrens, J.F., "Fall Applications of Herbicides for Control of Quackgrass and Yellow Nutsedge in TAXUS CUSPIDATA CAPITATA," Proc. Northeast. Weed Sci. Soc. 28:379-385(1974).

<5159>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Apple (PYRUS MALUS)
EXPERIMENTAL DOSE: 6.7, 13.4 and 20.2 kg/ha
APPLICATION METHODS: Preemergent herbicide administered annually in spring; applications were 1,2, and 3 times recommended rate
EXPERIMENTAL CONDITIONS: Field studies conducted for 6 years; soil -- sandy clay loam surface overlying medium clay at 40-50 cm depth; average annual rainfall 640 mm; 6 mature trees for each treatment
EFFECTS: Chlorotic symptoms at end of first year and some defoliation at highest rate (20.2 kg/ha); no significant effect on yield
COMMENTS: Possible injury symptoms in second year masked by red spider mite infestation and hail storm in December; first season was dry and third season results masked again by spider mites and by drought
REFERENCE: Campbell, J.E. and A. D. Mears, "Effects of Long-Term Use of Several Herbicides on Apple Trees," Aust. J. Exp. Agric. Anim. Husb. 14(67):262-265 (1974).

<5160>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Cotoneaster (COTONEASTER sp.); Euonymus (EUONYMUS FORTUNEI); Morningglory, ivyleaf (IPOMOEA HEDERACEA); Millet, foxtail (SETARIA ITALICA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA)
EXPERIMENTAL DOSE: 0.44 g/cm2
APPLICATION METHODS: Treatments replicated 5 times
EXPERIMENTAL CONDITIONS: Soil -- 1 sphagnum peat: 1 horticultural grade perlite; crop plants cotoneaster and euonymus placed in plastic 1 gal pots, 20 seeds of each weed species planted in each pot; activated carbon placed in soil to protect crop roots and on surface to absorb herbicide
EFFECTS: Evonymus chlorosis; chlorosis more severe without addition of activated carbon to soil; good weed control
COMMENTS: Herbicides used safely for containerized nursery stock grown in porous media when activated carbon mixed in soil medium and when herbicide is incorporated into activated carbon-free layer on surface of soil; activated carbon absorbs herbicide before injury to crop roots occur
REFERENCE: Carpenter, P.L., "Chemical Weed Control in Container-grown Nursery Stock," Hortscience 8(5):385-386 (1973).

<5161>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Canarygrass (PHALARIS PARADOXA); Canarygrass (PHALARIS BRACHYSTACHYS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.05, 0.075, 0.1, and 0.15 kg/ha
APPLICATION METHODS: Postemergence WP application; applications with field sprayer at volume rate of 350-400 l./ha
EXPERIMENTAL CONDITIONS: Field heavily infested with canarygrass; wheat was 19-22 cm high when sprayed; sandy clay loam soil; split-plot design with 4 replicates; rainfall was 490 mm during growing season
EFFECTS: No affect on wheat or canarygrass; 0.075 or 0.1 kg/ha simazine plus 0.5 kg/ha methoprotryne gave a high wheat yield
COMMENTS: Confirmation of selective action of simazine on wheat
REFERENCE: Eshel, Y., "Selective Action of Triazines for Control of Wild Canarygrass in Wheat," Weed Res. 12(4): 301-309 (1972).

<5162>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Horseweed (CONYZA CANADENSIS); Poplar, yellow (LIRIODENDRON TULIPIFERA); Button bush (CEPHALANTHUS OCCIDENTALIS); Elderberry (SAMBUCUS CANADENSIS); Sumac, smooth (RHUS GLABRA); Honeysuckle, Japanese (LONICERA JAPONICA)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Preemergence application as (1) 80% WP and (2) a 4% granular formation; WP applied with hand sprayers, G applied by hand
EXPERIMENTAL CONDITIONS: Level bottomland with soil of alluvial origin; hand planted with density of 610 yellow poplar seedlings per acre; grid pattern of 20 square plots 1/40th acre in size established; each treatment applied to 5 plots
EFFECTS: No phytotoxic effects to yellow poplar during first growing season; initially WP applications gave better weed control than G applications, by midseason control was equal; tree height increased with % weed control; woody vines and bushes unaffected
COMMENTS: Growth expressions (height, diameter, etc.) greater on plots treated with sprays of WP formulations -- authors note the advantage of early weed control for growth, early control not provided by granular applications
REFERENCE: Fitzgerald, C.H., and C.W. Selden, "Effects of Herbaceous Weed Control in a Yellow Poplar Plantation," Proc. South. Weed Sci. Soc. 26:288-293 (1973).

<5163>
<5163>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 80% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate control of all weeds with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<5164>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Broadleaf weeds; Grasses; Plants
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; time period--1967 to 1969; soils--Ramona sandy loam and Greenfield
EFFECTS: Effective weed control at both rates but moderate to severe damage to asparagus
COMMENTS: Chemicals which killed or severely damaged asparagus include monuron, diuron, simazine, sinbar, sindone-b, treflan, tenoran, and CIPC; vegiben marginal; of herbicides tested in these trials for pre-emergence weed control in direct-seeded asparagus, balan, bensulide, and brominal offer most promising results
REFERENCE: Whiting, F.L., F.H. Takatori, and J.M. Lyons, "Weed Control in Asparagus," Calif Agric. 25(1):4-5 (1971).

<5165>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 4.5 kg/ha
APPLICATION METHODS: Soil (50 g) containing herbicides added to surface of soil in which apple trees were growing
EXPERIMENTAL CONDITIONS: Environmental chamber; light intensity--21.6 klux; photoperiod--15 hr; temperature--21 C (day) and 16 C (night)
EFFECTS: Photosynthesis inhibited
COMMENTS: Monuron caused greatest decrease in photosynthesis, followed by atrazine and simazine, diuron had no effect on photosynthesis; monuron and atrazine applications resulted in decreased plastochron index; influence of herbicides on photosynthesis apparent 10 days following treatment; effect persisted for remainder of experimental period of 40 days
REFERENCE: Sharma, D.P., D.C. Ferree, and F.O. Hartman, "Effect of Some Soil Applied Herbicides on Net Photosynthesis and Growth of Apple Trees," Hortscience 12(2):153-154 (1977).

<5166>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Velvetleaf (ABUTILON THEOPHRASTI); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A
APPLICATION METHODS: WP formulation; spray applied in 40 gpa volume
EXPERIMENTAL CONDITIONS: Sassafras loam soil; plots--4 rows or 14 ft x 20 ft; randomized block design with 3 replications; May 24 planting and August 8 ratings and harvest; center 2 rows of each plot used for yield determination
EFFECTS: 76% broadleaf and 50% grass control at 1.0 lb/A; 90% broadleaf and 54% grass control at 1.5 lb/A; no significant effect on corn yield
COMMENTS: Combination with other herbicides proved more effective than single herbicide treatments
REFERENCE: Lay, M.M., W.F. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

<5167>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Apple (PYRUS MALUS); Fescue, creeping red (FESTUCA RUBRA); Quackgrass (AGROPYRON REPENS); Bluegrass, annual (POA ANNUA); Orchard grass (DACTYLIS GLOMERATA); Crabgrass, large (DIGITARIA SANGUINALIS); Milkweed (ASCLEPIAS SYRIACA); Goldenrod (SOLIDAGO CANADENSIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Postemergence spray application delivered at 35 gal/A in April or early May
EXPERIMENTAL CONDITIONS: 2 apple orchards--trees 3 years old at start of experiment; 1 row = 1 herbicide treatment 36 sq. ft. area treated around each free; weed control and apple tree injury ratings made June 20 and September 20 for 10 consecutive years
EFFECTS: Orchard 1--72% broadleaf and 55% grass control on June 20, 45% broadleaf and 28% grass control on September 20; orchard 2--74% broadleaf and 55% grass control on June 20, 48% broadleaf and 21% grass control on September 20; no injury to apple trees

<5167> CONT.
COMMENTS: Results reported represent 10 year summary; chemical weed control practical and safe for use in apple orchards; to reduce chance of apple tree injury, alternate herbicide treatment every other year; combinations of herbicides more effective than single herbicides except dichlobenil
REFERENCE: Langer, C.A., W.H. Smith, and G. Gebe, "Ten Consecutive Years of Weed Control in Each of Two Separate Apple Orchards in New Hampshire," Proc. Northeast. Weed Sci. Soc. 27:257-261 (1973).

<5168>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Sorghum (SORGHUM BICOLOR); Plants
EXPERIMENTAL DOSE: 1.25 kg/ha
APPLICATION METHODS: Formulation--95% simazine; treatments applied as spray in 1000 l. water; preemergence application
EXPERIMENTAL CONDITIONS: Rain-fed conditions, light black soil; 4 replications, randomized block design with plot size 610 cm x 458 cm
EFFECTS: No effect on sorghum germination; effective weed control; grain yield higher than control
COMMENTS: Simazine and atrazine more effective in weed control and grain yield than other herbicides tested; combination of simazine (1.25 kg/ha) preemergence plus 2,4-D (1 kg/ha) postemergence also gave good weed control and grain yield
REFERENCE: Krishnamurthy, K., "Effect of Herbicides on Weeds and Yield of Sorghum," Indian J. Agric. Sci. 40(5):474-480 (1970).

<5169>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Prince of Wales feather (AMARANTHUS POWELLII); Wireweed (POLYGONUM AVICULARE); Cress, pepper (LEPIDIUM HYSSOPIFOLUM); Lettuce, prickly (LACTUCA SCAPIOLA); Lamb's-tongue (PLANTAGO LANCEOLATA); Couchgrass (CYNODON DACTYLON); Prairie grass (BROMUS sp.); Love-grass (ERAGROSTIS sp.); Lamb's-quarters (CHENOPODIUM ALBUM); Sowthistle, annual (SONCHUS OLERACEUS); Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Late August treatments applied with knapsack sprayer at 30 psi pressure and calibrated to deliver 600 l/ha
EXPERIMENTAL CONDITIONS: 1 year old peach trees; 4 replicates, 2 trees in each plot; sandy clay loam soil; herbicides applied late August for 2 consecutive years; assessments made in December and March of both growing seasons and also in November during the second growing season
EFFECTS: Grass and broadleaf weeds reduced; no improvement in peach tree growth; no injury to peach trees
COMMENTS: December application of paraquat and diquat necessary second growing season to maintain commercially acceptable weed control
REFERENCE: Koffmann, W. and J. Kaldor, "Chemical Weed Control in Young Peach Trees," Aust. J. Exp. Agric. Anim. Husb. 15:566-569 (1975).

<5170>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Flax (LINUM USITATISSIMUM); Beet, sugar (BETA VULGARIS); Buckwheat (FAGOPYRUM ESCULENTUM)
EXPERIMENTAL DOSE: 0.4 and 0.8 mg/100 g soil
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--20 to 23 C (day) and 15 to 17 C (night); RH--60 to 85%; evaluation time--up to 28 da
EFFECTS: Reduced growth
COMMENTS: Triazine herbicides exerted increasing inhibitory effect on dry and fresh weight yields, transpiration, and growth of seedlings of flax, beet and buckwheat; enhanced accumulation of free amino acids and decrease of simple sugar values noted in aboveground parts of test plants; results interpreted as secondary effects of inhibitory action of triazines on plant photosynthesis; toxicity of tested chemicals to flax, beet, and buckwheat decreased in following order: atrazine, simazine, propazine, atratone, prometone and prometryne; flax more resistant to triazines than beets and buckwheat
REFERENCE: Ploszynski, M. and H. Zurawski, "The Phytotoxic Action of Triazine Herbicides on Flax, Beets, and Buckwheat Seedlings, and Some Physiological Changes Connected With It," Acta Agrobot. 24(2):206-215 (1971).

<5171>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazin
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence and postemergence sprays; 60 gal/A; applied singly and in combination in some instances
EXPERIMENTAL CONDITIONS: Field study; no cultivation
EFFECTS: Active against all grasses tested
COMMENTS: Postemergence treatments generally less effective on crabgrass and panicum and more effective on foxtails; sometimes only 2 or 3 plant species tested
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

<5172>
<5172>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Pimpernel, common (ANAGALLIS ARVENSIS); Crunchweed (SINAPIS ARVENSIS); Pigweed (AMARANTHUS sp.); Bindweed, field (CONVOLVULUS ARVENSIS); Mustard, black (BRASSICA NIGRA)
EXPERIMENTAL DOSE: 0.75 and 1.50 kg/ha
APPLICATION METHODS: Postemergence application; 200 l./ha; trifluralin and chlorthal-dimethyl incorporated by rototilling; all others not incorporated
EXPERIMENTAL CONDITIONS: Field study; plots sprayed twice a year over a 4-year period; sprinkler irrigation; greenhouse study; residues determined by mustard bioassay
EFFECTS: Moderate control initially but effective control later of A. COERULEA and S. ARVENSIS; effective control of AMARANTHUS and CONVOLVULUS; moderate residual toxicity to mustard
COMMENTS: Phytotoxicity to weeds in decreasing order: diuron, bromacil, simazine, trifluralin, prometryne, neburon, fluometuron, pyrazon, diphenamid, chlorthal-dimethyl; persistence of herbicides in decreasing order: diuron, bromacil, simazine, neburon, fluometuron, trifluralin, prometryne; control produced by pyrazon improved with the number of applications, but that of diphenamid and chlorthal-dimethyl remained weak and short
REFERENCE: Horowitz, M., T. Blumenfeld, G. Herzlinger, and N. Hulin, "Effects of Repeated Applications of Ten Herbicides on Weed Population, Residue Accumulation and Nitrification," Weed Res. 14(2):97-109 (1974).

<5173>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Plants; Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 0.7, 0.8, and 1.7 kg/ha
APPLICATION METHODS: Sprayed as seedlings were emerging or on scions; 460 or 900 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Berrian fine sandy loam; periodic cultivation and weeding as needed; time period--1969 and 1970
EFFECTS: Moderate control of weeds with no adverse effect on peach seedlings
COMMENTS: Problem of weed populations that emerge before and with peaches eliminated by all terbacil rates and reduced by simazine; the herbicides as supplement to cultivation did no adversely affect emergence or final stand of budded seedlings in first year, or growth from scion buds in next year; size attained by seedlings and by scion growth under herbicides equal or greater than that under cultivation alone
REFERENCE: Curtis, O.F., "Weed Control in Peach Nurseries with Terbacil," Proc. Northeast. Weed Sci. Soc. 28:213-218 (1974).

<5174>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310 silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in all plants at 1 and 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<5175>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Bermudagrass, common (CYNODON DACTYLON); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Preemergence broadcast treatment in 40 gpa
EXPERIMENTAL CONDITIONS: 3-year experiment; Cecil sandy loam; application in July, August, September, and October of all 3 years (1971-1973); 5 X 10 ft plots, split-plot design--dates of treatment as main plots, herbicide treatments as subplots with 4 replications; ratings made year following treatment
EFFECTS: Crabgrass not satisfactorily controlled
COMMENTS: Simazine and pronamide, least crabgrass control of herbicides tested; no mention of bermudagrass toxicity
REFERENCE: Johnson, B.J., "Crabgrass Control in Common Bermudagrass Turf from Herbicides Applied the Previous Year," Ga. Agric. Res. 17(2):17-18 (1975).

<5176>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Ash, green (FRAXINUS PENNSYLVANICA); Poplar, yellow (LIRIODENDRON TULIPIFERA); Walnut, black (JUGLANS NIGRA); Pine, white (PINUS STROBUS); Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 4.0, 8.0, and 12.0 kg/ha
APPLICATION METHODS: Posttransplant spray; 29 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Ross-Geneco complex
EFFECTS: Reduced survival of ash and no effect on red pine with growth stimulation of other species
COMMENTS: Oxadiazon, napropamide and simazine produced very favorable results at low rates; simazine only

<5176> CONT.
injurious to green ash; diphenamid and DCPA effective without incorporation only at extremely high rates; tolerance range for Velpar and RP-23465 for use on newly planted seedlings appear very small; bifenox as used did not appear to be detrimental to seedlings
REFERENCE: Wiltrout, T.R. and H.A. Holt, "Prospects of Controlling Vegetation in New Forest Plantations," Proc. N. Cent. Weed Control Conf. 30:31-36 (1975).

<5177>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Orach (ATRIPLEX PATULA); Speedwell (VERONICA sp.); Sowthistle, annual (SONCHUS OLERACEUS); Knotweed (POLYGONUM AVICULARE); Shepherd's purse (CAPSELLA BURSA-PASTORIS)
EXPERIMENTAL DOSE: 0.84, 1.68 and 3.36 kg/ha
APPLICATION METHODS: Preemergence application made with knapsack sprayer at a volume of 562 l./ha
EXPERIMENTAL CONDITIONS: Oxford clay soil; rows--3.7 m long and 61 cm apart, final corn density, 11 plants/m(2); split plot, randomized soil design with 3 replications
EFFECTS: 0.84 kg/ha gave 78% weed control; 1.68 kg/ha in 3 trials gave 85, 94 and 96% control respectively--rain supplemented by irrigation gave 100 % control; 3.36 kg/ha in 2 trials gave 89 and 97% control respectively; no significant effect on maize yield when compared with hand weeded control
COMMENTS: Weather was drier in trial 1 than trial 2--less control resulted
REFERENCE: Ludwig, J.W., "Effects of Herbicides on the Productivity of Fodder Maize with Special Reference to Pre-emergence Applications of 2,4-D Amine," Weed Res. 13(1):1-11 (1973).

<5178>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.2, 0.4, 0.8, 1.6 and 2.4 ppm
APPLICATION METHODS: Preplanting application
EXPERIMENTAL CONDITIONS: Pot studies; styrofoam cups filled with 6 oz of treated soil--4 seeds planted per cup; injury assessed after 12 days; untreated soil as control
EFFECTS: No injury at 0.2 and 0.4 ppm; 0.8 ppm caused some injury--marginal whitening followed by loss of midrib color; 1.6 and 2.4 ppm killed most plants
COMMENTS: Study was promoted by poor ornamental plant growth on soil where asparagus fern previously grew; residual simazine thought to be reason for poor growth but phytotoxic symptoms of cucumbers grown in fern soil were not same as those of cucumbers grown in simazine treated soil
REFERENCE: Elmstrom, G.W., "Inactivation of Residual Herbicide in an Abandoned Fernery," Fl. State Hort. Soc. 85:414-415 (1972).

<5179>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 1.1 kg/ha
APPLICATION METHODS: Preemergence treatments; September applications
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Severe injury to all plants
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<5180>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 2.0 to 16.0 lb/A
APPLICATION METHODS: Added to soil and mixed
EXPERIMENTAL CONDITIONS: Germination chamber; temperature--75 F (day) and 72 F night; paper carton culture; soil--Plainfield sand; evaluation time--up to 54 da
EFFECTS: No effect on germination and kill of seedlings at 16 lb/A
COMMENTS: Seed germination influenced only very slightly, or not at all, by variety of soil-incorporated herbicides; in contrast, all but one of soil-incorporated herbicides caused seedling mortality and decreased dry-weight production of seedlings; greatest toxicity observed at highest dosages used; EPTC and CDAA at high dosages very toxic to tree seedlings, whereas DCPA showed no deleterious effects at any dosage
REFERENCE: Kozlowski, T.T. and J.H. Torrie, "Effect of Soil Incorporation of Herbicides on Seed Germination and Growth of Pine Seedlings," Soil Sci. 100(2):139-146 (1965).

<5181>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Foxtail, yellow (SETARIA GLAUCA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Preemergence applications principally, but some postemergence applications (alachlor, cyprazine, and cyanazine); 60 gal/A; 40 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1970 to 1972
EFFECTS: Effective control of yellow foxtail and slight to moderate control of crabgrass and fall panicum

<5181>
<5181> CONT.
COMMENTS: Preemergence herbicides which controlled large crabgrass also controlled fall panicum; these included: alachlor, linuron, cyanazine and prynachlor; herbicides which did not control large crabgrass and fall panicum included atrazine, cyprazine and dicamba
REFERENCE: Bayer, G.H., "An Evaluation of Herbicides for Control of Annual Grasses in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:47-51 (1973).

<5182>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A; 80% WP
APPLICATION METHODS: Preemergence, preplant incorporated, and postemergence; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; Diazinon applied preplant incorporated (4.0 lb/gal EC)
EFFECTS: Effective control of weeds with no adverse effect on corn in preemergence applications
COMMENTS: Postemergence applications of atrazine alone and in combination with weed oil or weed oil + 2,4-D gave fair grassy weed control; postemergence application of atrazine combined with alachlor initially gave only fair control of grasses but grass control improved with the passage of time; all other chemical treatments resulted in good to excellent grass control
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<5183>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Broadleaf weeds; Grasses; Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.0 and 1.5 lb/A; WP
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Sassafras loam
EFFECTS: Effective control of broadleafs at 1.0 lb/A only and moderate control of grasses with no adverse effect on corn
COMMENTS: Effective combinations were alachlor + atrazine, prynachlor + atrazine, chlorbromuron + atrazine, and chlorbromuron + simazine; atrazine slightly more effective than simazine
REFERENCE: Lay, M.M., W.P. Smith, and R.D. Ilnicki, "Weed Control Effectiveness of Some Acetanilide, Triazine, and Substituted Urea Herbicides in Sweet Corn," Proc. Northeast. Weed Sci. Soc. 27:61-68 (1973).

<5184>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Horseweed (CONYZA CANADENSIS); Knotweed (POLYGONUM sp.); Lespedeza, sericea (LESPEDEZA CUNEATA); Lettuce, tall (LACTUCA CANADENSIS); Blackberry (RUBUS sp.); Goldenrod (SOLIDAGO sp.); Aster (ASTER sp.); Sycamore, American (PLANTANUS OCCIDENTALIS)
EXPERIMENTAL DOSE: 4.5 and 9.0 kg/ha
APPLICATION METHODS: Preemergence application with (1) 80% WP and (2) 4% granular treatment
EXPERIMENTAL CONDITIONS: Fertile bottomland; 1580 sycamore seedlings/ha hand planted; plots of 0.04 ha established; 5 replications of each treatment in May; 3 year study
EFFECTS: About 80% weed control through June with spray, only 68% with granules; 17% weed control at 4.5 kg/ha and 26% at 9.0 kg/ha by August; sycamore survival about 70% with 9.0 kg/ha and 100% with 4.5 kg/ha; early season weed control less with granules than with wettable powder; minor phytotoxic symptoms to sycamores-leaf bronzing, curling, and necrosis; increased height, diameter and volume growth of trees
COMMENTS: Weed control not improved by increasing dosage; phototoxicity to sycamore was not considered serious; residual weed control not very significant the second and third years; first year weed control enables establishment and maintenance of sycamores, 60 to 70% weed control is effective for tree growth
REFERENCE: Fitzgerald, C.H., R.F. Richards, C.W. Selden, and J.T. May, "Three Year Effects of Herbaceous Weed Control," Weed Sci. 23(1):32-35 (1975).

<5185>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Bermudagrass (CYNODON sp.); Goosegrass (ELEUSINE INDICA)
EXPERIMENTAL DOSE: 0.56, 1.12, and 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 374 l./ha; 0.2% non-ionic surfactant; MSMA applied up to 3X at one week intervals
EXPERIMENTAL CONDITIONS: Field study; soil--Vertic Ustropets (Waipahu silty clay)
EFFECTS: Slight control of mature and immature goosegrass at 2.24 kg/ha with moderate initial injury to bermudagrass
COMMENTS: Excellent goosegrass control obtained when s-triazine herbicides used, followed by two or three applications of MSMA; three applications of MSMA alone ineffective in controlling mature goosegrass; no phytotoxicity observed from any herbicide treatment on common bermudagrass; Tifgreen discolored by all herbicide treatments, however, the injury was of short duration
REFERENCE: Murdoch, C.L. and D. Ikeda, "Goosegrass Control in Bermudagrass Turf with Combinations of MSMA and S-Triazines," Agron. J. 66:712-714 (1974).

<5186>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simizine
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 2.0 and 3.0 lb/A
APPLICATION METHODS: Preemergence and postemergence applications; EC, WP, and oil additive formulations
EXPERIMENTAL CONDITIONS: Field study; soil--Paxton fine sandy loam; fertilizer (5-10-10) and diazinon (4.0 lb/A) applied before disking
EFFECTS: Effective weed control in all applications with 3.0 lb/A rate the most effective; no corn injury at any application rate; postemergence application slightly less effective
COMMENTS: Combination preemergence or postemergence treatments about as effective as herbicides alone
REFERENCE: Dest, W.M., R.A. Peters, and A.C. Triolo, "Annual Weed Control in Field Corn," Proc. Northeast. Weed Sci. Soc. 27:31-40 (1973).

<5187>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Panicum, fall (PANICUM DICHOTOMIFLORUM); Nutsedge, yellow (CYPERUS ESCULENTUS); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 1.5 and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold sandy loam; evaluation time--approx. 2 mos; corn harvested at maturity for yield data
EFFECTS: Effective control of lambsquarters, pigweed, and nutsedge but only moderate control of crabgrass, fall panicum, and morningglory; slight or no effect on corn varieties
COMMENTS: Seneca Chief most susceptible variety to yield reductions particularly from poorer herbicide treatments; all varieties showed injury from metribuzin; the best herbicide treatment was alachlor + MC 4379 80W
REFERENCE: Herman, D.J., M.M. Lay, and R.D. Ilnicki, "The Response of Several Sweet Corn Varieties to Various Herbicides and Herbicide Combinations," Proc. Northeast. Weed Sci. Soc. 28:175-181 (1974).

<5188>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Broadleaf weeds; Grasses; Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 35 gal/A; dichlorobenil was a 4% G formulation
EXPERIMENTAL CONDITIONS: Field study; orchards in two locations; three varieties of apples; time period--1963 to 1972
EFFECTS: Moderate control of broadleafs and slight to moderate control of grass weeds with no adverse effect on apples
COMMENTS: All chemicals effective, but combinations gave more complete control of all weeds; several weeds gave slight problems in spots once the main weed competition killed out.
REFERENCE: Langer, C.A., W.H. Smith, and G. Gebe, "Ten Consecutive Years of Weed Control in Each of Two Separate Apple Orchards in New Hampshire," Proc. Northeast. Weed Sci. Soc. 27:257-261 (1973).

<5189>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Tafazine
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 2.24, 3.36, and 4.48 kg/ha; 50% WP
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; application one day after sowing; time period -- 1969 to 1971
EFFECTS: Effective control of weeds but reduced corn yield at 4.48 kg/ha
COMMENTS: Atrazine, and lasso found on par with hand weeding as far as grain yields concerned; atrazine found to control broad spectrum of weeds compared to other herbicides; tafazine 50W effective in controlling weeds but grain yields depressed
REFERENCE: Singh, D.J.C., V.L. Hall, and K.N. Rao, "Weed Control in Maize by Herbicides," The Andhra Agric. J. 18(3):91-94 (1971).

<5190>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Iris, tall bearded (IRIS GERMANICA); Grasses; Lettuce, prickly (LACTUCA SCARIOLA); Iris, tall bearded (IRIS GERMANICA)
EXPERIMENTAL DOSE: 4.5, 9.0, and 18.0 kg/ha; 80% WP
APPLICATION METHODS: Broadcast dry; mixed with calcined clay and applied at 1000 kg/ha; soil incorporated to 10-15 cm depth
EXPERIMENTAL CONDITIONS: Field Study; evaluation period--up to one yr
EFFECTS: At 9.0 kg/ha, effective control of broadleafs and moderate control of grass weeds with no adverse effect on iris rhizome growth
COMMENTS: Fall-applied simazine and trifluralin satisfactorily controlled annual and biennial weeds in tall bearded iris; increased application rates improved control of semitolerant weeds
REFERENCE: Millbocker, D.C., "Chemical Weed Control in Tall Bearded Iris," Weed Sci. 21(63):258 (1973).

<5191>
<5191>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Bromegrass, smooth (BROMUS INERMIS); Grama, sideoats (BOUTELOUA CURTIPENDULA); Indian grass (SORGHASTRUM NUTANS); Switchgrass (PANICUM VIRGATUM); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.1, 3.4, and 9.0 kg/ha
APPLICATION METHODS: Postemergence spray; 187 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Sharpsburg silty clay loam; forage grasses treated and soil at different depths (0-8, 8-15, and 15-30 cm) removed at different times (4 and 16 mos) for greenhouse bioassay using soybean
EFFECTS: Generally moderate to severe growth reduction of soybean at highest rates for 4 mos only and at 0-8 soil depth with no adverse effects on forage grasses
COMMENTS: Most herbicide residues 4 or 16 months after application located in the 0- to 8-cm soil depth; only bromacil, or terbacil at high rates depressed soybean growth in soil from the 8- to 15-cm depth
REFERENCE: Morrow, L.A. and M.K. McCarty, "Selectivity and Soil Persistence of Certain Herbicides Used on Perennial Forage Grasses," J. Envir. Qual. 5(4):462-465 (1976).

<5192>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Bluegrass, annual (POA ANNUA); Chickweed, common (STELLARIA MEDIA); Bird's-eye (VERONICA PERSICA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Pineappleweed (MATRICARIA MATRICARIOIDES); Pimpernel, common (ANAGALLIS ARVENSIS); Fumitory (FUMARIA OFFICINALIS); Plantain, broad-leaf (PLANTAGO MAJOR); Knotweed (POLYGONUM AVICULARE); Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 1.1 kg/ha
APPLICATION METHODS: Preemergence spray; 350 l./ha at nozzle pressure of 2.1 bar
EXPERIMENTAL CONDITIONS: Field study; soil--calcareous loam; malathion spray for black-fly
EFFECTS: Effective control of weeds with no adverse effect on field beans
COMMENTS: Pre-emergence applications of simazine and of dimefuron effectively controlled weeds; bean seed yields similar to regularly hand-weeded control; dinoseb-acetate and early, but not late, post-emergence applications of dimefuron controlled weeds satisfactorily; dimefuron potentially useful in spring-sown field beans because it can be applied pre- or early post-emergence without damaging crop
REFERENCE: Glasgow, J.L., J.W. Dicks, and D.R. Hodgson, "Competition by, and Chemical Control of, Natural Weed Populations in Spring-Sown Field Beans (VICIA FABA)," Ann. Appl. Biol. 84(2):259-269 (1976).

<5193>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazin
PLANT: Grasses; Broadleaf weeds; Cotton (GOSSYPIUM HIRSUTUM); Corn (ZEA MAYS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 3.0 and 6.0 lb/A
APPLICATION METHODS: Preplant non-incorporated
EXPERIMENTAL CONDITIONS: Field study; soil--Bosket very fine sandy loam; time period--1957 and 1958; excessive rain in 1958 tended to lessen herbicidal effect and increase damage to crop plants; results quite variable
EFFECTS: At 3.0 lb/A, effective weed control with moderate damage of cotton and soybean and no damage of corn
COMMENTS: EPTC, DMTT, SMDC, CDAA, dinoseb, and 2,4-D caused no crop injury at rates which gave adequate weed control; diuron, 2,4-D, 2,4-DB, simazine, and 2,4-DES somewhat injurious to cotton and soybeans, but fairly safe on corn; MCPB, CIPC, and dalapon appeared worthy of further testing; 2-chloro-4,6-bis(isopropylamino)-s-triazine, highly toxic to cotton and soybeans; 2,3,5-TBA toxic to all crops
REFERENCE: Bingham, S.W. and C.G. McWhorter, "Preliminary Evaluation of Several Materials as Pre-Planting Herbicides for Cotton, Corn, and Soybeans," Proc. Southern Weed Conf. 12:45-49 (1959).

<5194>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.5 to 6.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: No control of weeds or adverse effect on cotton
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<5195>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Shepherd's purse (CAPSELLA BURSA-PASTORIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Pigweed, prostrate (AMARANTHUS BLITOIDES); Stinkweed (THLASPI ARVENSE); Lettuce, prickly (LACTUCA SCARIOLA); Ash, green (FRAXINUS PENNSYLVANICA); Spruce, white (PICEA GLAUCA); Spruce, Colorado (PICEA PUNGENS); Pine, Scots (PINUS SYLVESTRIS); Cottonwood, eastern (POPULUS DELTOIDES); Poplar, northwest (POPULUS sp.); Willow, acute (SALIX ACUTIFOLIA); Willow, laurel-leaf (SALIX PENTANDRA); Elm, American (ULMUS AMERICANA); Elm, Siberian (ULMUS PUMILA); Peatree, Siberian (CARAGANA ARBORESCENS); Cotoneaster, Peking (COTONEASTER ACUTIFOLIA); Hawthorn, red (CRATAEGUS sp.); Buckthorn, sea (HIPPOPHAE RHAMNOIDES); Crabapple, Siberian (MALUS BACCATA); Mayday tree (PRUNUS PADUS); Chokecherry, black (PRUNUS VIRGINIANA); Parsley-piert (ALCHEMILLA MICROCORPA); Buffaloberry (SHEPHERDIA ARGENTEA); Ash, American mountain (SORBUS AMERICANA); Lilac, late (SYRINGA VILLOSA); Honeysuckle, tartarian (LONICERA LATARICA)
EXPERIMENTAL DOSE: 3.36, 6.72, and 10.08 kg/ha

<5195> CONT.
APPLICATION METHODS: Posttransplant broadcast; 4% G
EXPERIMENTAL CONDITIONS: Field study; soil--Indian Head clay loam; pH--7.8; evaluation time--4, 12, and 14 mos; application made one week after transplanting
EFFECTS: Effective control of weeds at two highest application rates; growth rate of some trees or shrubs reduced but no injury observed
COMMENTS: 6.72 kg/ha simazine resulted in effective weed control, allowing adequate growth of transplanted trees and shrubs; repeated annual application necessary for continuing weed control
REFERENCE: Grover, R. and G.A. Morgan, "Response of Weeds and Several Shelterbelt Tree and Shrub Species to Granular Simazine," Can. J. Plant Sci. 52:197-202 (1972).

<5196>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Bromegrass, downy (BROMUS TECTORUM); Bromegrass, smooth (BROMUS INERMIS)
EXPERIMENTAL DOSE: 1.0 to 3.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 or 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; 2 locations in WA; time period--1958 to 1960
EFFECTS: At 2.0 and 3.0 lb/A, effective downy brome control with no adverse effect on smooth brome seed yield
COMMENTS: IPC and CIPC most effective herbicides for controlling downy brome without serious injury to perennial grasses grown for seed production; endothal gave good downy brome control
REFERENCE: Canode, C.L., W.C. Robocker, and T.J. Muzik, "Grass Seed Production as Influenced by Chemical Control of Downy Brome," Weeds 10(3):216-219 (1962).

<5197>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 9.0 kg/ha
APPLICATION METHODS: One-half as preemergence and one-half as postemergence sprays
EXPERIMENTAL CONDITIONS: Field study; wheat cultivation following corn crop harvest
EFFECTS: Reduced number and size of vascular bundles resulting in reduced growth and yield
COMMENTS: Thinner cuticle, vigorous and continuous band of sclerenchymatous cells, greater number with larger diameter of vascular bundles in 2,4-D treated samples seemed to favour better growth of wheat plant; reflected in better yield under 2,4-D than simazine treatments
REFERENCE: Sharma, N.N. and R.K. Roy, "Anatomical Studies on Wheat Plants From Plots Treated With Weedicides," Sci. and Cult. 40(4):161-162 (1974).

<5198>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Grasses; Broadleaf weeds; Lupine, narrow-leaf (LUPINUS ANGUSTIFOLIUS)
EXPERIMENTAL DOSE: 0.8, 1.1, 1.7, and 2.4 kg/ha
APPLICATION METHODS: Preemergence spray; surface applied immediately after seeding; 80% WP; 100-200 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--7 types; 18 locations in western Australia; time period--1972 to 1974
EFFECTS: Reduced lupine yields at all rates at various northern sites; increased yields at various southern sites at all rates; moderate control of annual grass and broadleaf weeds
COMMENTS: Significant yield increases obtained on at least one occasion with alachlor, diuron, linuron, simazine, and trifluralin; diuron, linuron, and simazine each resulted in significant lupin yield reduction on one occasion
REFERENCE: Allen, J.M., "2. The Response of Narrow-Leafed Lupins to Preemergence Herbicides," Aust. J. Exp. Agric. Anim. Husb. 17(84):118-125 (1977).

<5199>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Corn (ZEA MAYS); Oat (AVENA SATIVA); Bean, kidney (PHASEOLUS VULGARIS); Swiss chard (BETA VULGARIS)
EXPERIMENTAL DOSE: 4.48 kg/ha
APPLICATION METHODS: Preplanting incorporated to 15-cm depth; spray treatment in 1,075 l. water
EXPERIMENTAL CONDITIONS: Somerset sandy loam; plots, 5 by 7 m; June 10, 1968 treatment; random soil samples during 1968, 1969, and 1970; oats, corn, beans, and Swiss chard planted June 1969; oats also sown May 1970
EFFECTS: 53, 40, and 18% simazine detected at 18, 63, and 161 days, respectively, after treatment--gradual decrease to 1.5% at 690 days; oats and beans injured (yield reduction) but not corn when planted June 1969 (0.18 ppm simazine residue), Swiss chard did not grow; slight toxicity to oats planted 2 years after simazine application, 0.03 ppm simazine residue
COMMENTS: Sensitive crops--no planting advised 1 year after simazine treatment; cropping contributes to simazine activity loss in soil
REFERENCE: Ragab, M.T.H., "Simazine Persistence in Soil and Effects of its Residue on Crops," Can. J. Plant Sci. 54:713-716 (1974).

<5200>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Quackgrass (AGROPYRON REPENS); Orchard grass (DACTYLIS GLOMERATA); Bluegrass, Kentucky (POA PRATENSIS); Dandelion, common (TARAXACUM OFFICINALE); Crabgrass, large (DIGITARIA SANGUINALIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 4 lb/A
APPLICATION METHODS: Postemergence in water at 40 gpa
EXPERIMENTAL CONDITIONS: Woodbridge fine sandy loam; 2 tons/A lime and 800 lb/A 15-15-15 fertilizer applied

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<5200> CONT.
April 17, corn seeded May 22; 9 by 30 ft plot; herbicide treatments April 24 when grass growth just starting and May 27 when grass was 10 to 12 inches tall; field experiments; above average rainfall
EFFECTS: April 24 application--good control of all plants except dandelion (poor control); May 27 application--good control of crabgrass, poor control of other species
COMMENTS: Grasses too tall May 27 for adequate control; combinations with other herbicides also tested--May 27 control not much better; no reported corn injury
REFERENCE: Peters, R.A. and W.M. Dest, "Glyphosate for Perennial Sod Kill in No-Tillage Corn," Proc. Northeast. Weed Sci. Soc. 27:1-6 (1973).

<5201>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Crabgrass, large (DIGITARIA SANGUINALIS); Wiregrass (ELEUSINE INDICA); Goosegrass (ELEUSINE AEGYPTICA); Love-grass (ERAGROSTIS MAJOR); (PANICUM TEXANUM); Bermudagrass, common (CYNODON DACTYLON); (FIMBRISTYLIS MILIACEA); Nutsedge, purple (CYPERUS ROTUNDUS); Galingale (CYPERUS IRIA); Sensitive-plant (MIMOSA PUDICA); Weeds; Amaranth (AMARANTHUS VIRIDIS); (ACHYRANTHES ASPERA); (CLEOSIA ARGENTIA); Croton (CROTON SPARCIFLORUS); Dayflower (COMMELINA BENGHALENSIS); Spurge, garden (EUPHORBIA HIRTA); Indigo (INDIOFERA CORDIFOLIA); Groundcherry (PHYSALIS MINIMA); Morningglory (IPOMOEA OBSCURA); (SIDA RHOMBIFOLIA)
EXPERIMENTAL DOSE: 3.95 kg/ha
APPLICATION METHODS: Preemergence followed by postemergence treatment at same rate
EXPERIMENTAL CONDITIONS: Field experiments; main crop and ratoon crop; 1.6 X 6.4 plots; unweeded control and hoed control (3 hoeings)
EFFECTS: No effect on bud germination or shoot regeneration of ratoon crop; number of millable cane increased over hoed control; good weed control
COMMENTS: Ratoon crop--sprouts emerging from harvested crop; no reported sugarcane injury; effects on specific weeds not given
REFERENCE: Patro, G.K. and G.C. Tosh, "Effect of Different Herbicides on Weeds and Yield of Sugarcane," Andhra Agric. J. 18(5):185-188 (1971).

<5202>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: CDT
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Weeds; Foxtail (SETARIA sp.); Crabgrass (DIGITARIA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Dandelion (TARAXACUM OFFICINALE); Purslane, common (PORTULACA OLERACEA); Pigweed, prostrate (AMARANTHUS GRAECIZANS); Medick, black (MEDICAGO LUPULINA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Postplanting treatments in 120 gpa water at 30 psi
EXPERIMENTAL CONDITIONS: Field study; 4 replications of each treatment; herbicide applied one day after planting; plants grown in containers and transplanted
EFFECTS: 112.8 and 73.5 weeds/6 sq ft at 1 and 2 lb/A, respectively; check--109.8 weeds/6 sq ft
COMMENTS: Weed species considered together for tabulations; excessive numbers of weeds persisted
REFERENCE: Stadtherr, R.J. and R.E. Widmer, "Chemical Weed Control in Garden Chrysanthemums," Weeds 7(1):82-87 (1956).

<5203>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Plants; Croton, gold dust (CODIAEUM VARIEGATUM)
EXPERIMENTAL DOSE: 1, 2, 4, and 8X recommended rate (4 lb/A); EC
APPLICATION METHODS: Herbicide-impregnated mulches (0.75 in. over soil surface)
EXPERIMENTAL CONDITIONS: Field study; pot culture; lath shade; overhead sprinkle irrigation; evaluation time--up to 28 wk
EFFECTS: At 2X rate, moderate control of weeds with no adverse effect on CODAIEUM at 28 weeks
COMMENTS: No crop phytotoxicity observed from any treatment; weed control initially good with each herbicide except dacthal when soil incorporated; after 8 weeks, weeds noted in 1 and 2x rates of both simazine and treflan soil incorporation treatments; after 28 weeks excessive weed growth found in every soil-incorporation treatment except lasso and treflan
REFERENCE: Neel, P.L., "Weed Control in Containers With Herbicide-Impregnated Mulch Materials," Proc. Fla. State Hort. Soc. 85:409-413 (1973).

<5204>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 500 micro M
APPLICATION METHODS: Addition to assay preparations of chloroplasts
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplasts
EFFECTS: Increased photochemical activity and chloroplast bleaching
COMMENTS: Dual wavelength spectrophotometry applied to observations of small spectral changes during biochemical reactions in intact tissue; based on principle that absorbance reading at wavelength of isobestic point of reaction fluctuates with time in same manner as reading at wavelength where an absorbance change due to reaction takes place
REFERENCE: Inoue, Y., Yaginuma, N., Ogawa, T., Konishi, K., and K. Shibata, "Spectral Changes of Chloroplasts as a Means to Examine Phytotoxic Effects of Herbicides," in Environmental Toxicology of Pesticides, F. Matsumura, G.M. Boush, and T. Misato (Eds.) Academic Press, New York and London, pp. 549-570 (1972).

<5205>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Addition to soil, mixed by blending 5 or 10 min.
EXPERIMENTAL CONDITIONS: Greenhouse study; flat culture; daily watering; evaluation time--7 wk; inhibition studied at 5 to 30 C
EFFECTS: Reduced growth especially at 25 to 30 C
COMMENTS: High temperatures greatly accelerated herbicide toxicity, but effects of temperature varied greatly among herbicides; atrazine and simazine more toxic than other herbicides tested at all temperatures; toxicity of simazine and atrazine apparent early, whereas effects of propazine, prometryne, prometone, and ipazine somewhat delayed
REFERENCE: Kozlowski, T.T., S. Sasaki, and J.H. Torrie, "Influence of Temperature on Phytotoxicity of Triazine Herbicides to Pine Seedlings," Amer. J. Bot. 54(6):790-796 (1967).

<5206>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 20.0 and 40.0 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Little or no effect
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most common phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<5207>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants; Pepper, pimento
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Undefined effect on crop plants or poor weed control (not given) or both; eliminated from further consideration for these crops
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<5208>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<5209>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Asparagus (ASPARAGUS OFFICINALIS); Oat (AVENA SATIVA); Oat (AVENA SATIVA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; time period--1962 to 1964; residue effect on subsequent crops (oats and soybean) studied after one and two years
EFFECTS: Effective weed control with no adverse effect on asparagus and soybean but reduced growth of oats
COMMENTS: Simazine most effective for controlling annual weed species in asparagus; linuron, diphenamid, monuron, and DCPA controlled weed species; other herbicides tested less effective
REFERENCE: Sandhu, S.S. and J.K. Greig, "Effects of Herbicides on Asparagus and Weeds, and Residues Retained in the Soil," Am. Soc. Hort. Sci. 88:372-377 (1966).

<5210>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A

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EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da
EFFECTS: No damage to corn, slight damage of ryegrass, and generally moderate damage to remaining species at 4.0 lb/A
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5211>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Grasses; Broadleaf weeds; Maple, amur (ACER GINNALA); Euonymus, Japanese (EUONYMUS FORTUNEI); Goldenbells (FORSYTHIA INTERMEDIA); Juniper, common (JUNIPERUS COMMUNIS); Pine, red (PINUS RESINOSA); Oak, pin (QUERCUS PALUSTRIS); Rose (ROSA WICHURAIANA); Lilac (SYRINGA VULGARIS); Yew, upright (TAXUS CUSPIDATA); Periwinkle, common (VINCA MINOR)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A
APPLICATION METHODS: Postplanting spray; 30 gal/A at 30 lb/sq in
EXPERIMENTAL CONDITIONS: Field study; soil--Stoy silt loam; application one week after planting in winter; time period--1961 and 1962
EFFECTS: Effective weed control at 2.0 lb/A with moderate to severe damage or kill of all woody plants except EUONYMUS FORSYTHIA, JUNIPERUS, PINE, and TAXUS (no or slight damage)
COMMENTS: Effective weed control, lasting until June of following year obtained with atrazine, CIPC, kloben, simazine, lorox, ametryne, and prometryne; atrazine, kloben and simazine gave nearly 100% control; atrazine caused plant injury with more dead plants in treated plots than in control planting; simazine and kloben safer materials
REFERENCE: Sherwood, L.V. and H.B. Kemmerer, "The Influence of Winter Applied Preemergence Herbicides on Weed Growth among Woody Ornamental Plants," Am. Soc. Hort. Sci. 85:657-662 (1964).

<5212>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Rose, wild (ROSA sp.); Plants
EXPERIMENTAL DOSE: 1.5 lb/A
APPLICATION METHODS: Postemergence
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate weed control with no adverse effect on bush roses
COMMENTS: Terbacil, atrazine, propachlor, and aziprotryne gave satisfactory weed control except last two which failed to control cruciferous weeds
REFERENCE: Roberts, L. and D.C. Harris, "Use of Terbacil, Atrazine and Other Herbicides in Bush Rose Production," Proc. 11th. Br. Weed Cont. Conf. 11(2):632-634 (1972).

<5213>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Broadleaf weeds; Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil-Freehold sandy loam
EFFECTS: Effective control of broadleafs and moderate control of grasses at all rates with no adverse effects on corn yield
COMMENTS: Combinations of alachlor and atrazine, alachlor and simazine, and alachlor and cyanazine resulted in better control of fall panicum than single treatments of atrazine, simazine, or cyanazine; best overall control obtained with alachlor
REFERENCE: Herman, D.J. and R.D. Ilnicki, "Weed Control in Corn by Alachlor and Prynachlor in Combination with Some S-Triazine Herbicides," Proc. Northeast. Weed Sci. Soc. 27:41-46 (1973).

<5214>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Quackgrass (AGROPYRON REPENS); Grasses; Broadleaf weeds; Arborvitae, Nare's (THUJA OCCIDENTALIS); False cyprus, goldplume (CHAMAECYPARIS PISIFERA); Juniper, Savin (JUNIPERUS SABINA)
EXPERIMENTAL DOSE: 2.0 lb/A
APPLICATION METHODS: Postemergence spray; directed to weed foliage and base of ornamentals
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam
EFFECTS: Slight to moderate control of weeds and none to slight damage of ornamentals
COMMENTS: Long term effective weed control obtained with little or no damage to mature narrowleaf evergreen plants, when glyphosate applied in combination with preemergent herbicides
REFERENCE: Haramaki, C., "Control of Perennial and Annual Weeds in Established Plantings of Narrowleaf Evergreens," Proc. Northeast. Weed Sci. Soc. 31:329-324 (1977).

<5215>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Plants; Peanut (ARACHIS HYPOGAEA)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Preemergence spray; 35 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; soil -- Tifton sandy loam; time period -- 1959 and 1960
EFFECTS: Effective weed control with moderate damage to peanut but no adverse effect on yield
COMMENTS: Certain mixtures, which contained sesone, 2,1-DEP, or amiben mixed with DNBP, gave seasonal weed

<5215> CONT.
control on band-treated peanuts; compared to herbicides applied singly, mixtures not only increased spectrum of weeds controlled but also permitted use of lowest rate of each component on weeds for which it was most effective
REFERENCE: Hauser, E.W., W.C. Shaw, H.F. Harrison, and S.A. Parham, "Herbicides and Herbicide Mixtures for Weed Control in Peanuts," Weeds 10(2):139-144 (1962).

<5216>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Simazine
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time--11 da
EFFECTS: Minimum lethal concentration 6.21 to 5.36 (negative logarithm) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5217>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-chloro-N,N'-diethyl-
CHEMICAL COMMON NAME: Siduron
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, creeping (AGROSTIS PALUSTRIS); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 11.2 and 22.4 kg/ha and 1x10(-6) to 1x10(-4) M
APPLICATION METHODS: Preemergence spray; 935 l./ha
EXPERIMENTAL CONDITIONS: Environmental chamber; soil--Conover loam; flat culture; field study, soil--Flanagan silt loam; germination study in petri plates
EFFECTS: No apparent adverse effects on growth or germination
COMMENTS: Glyphosate reduced shoot growth in all but two cultivars; siduron had no effect; glyphosate or siduron applied to the soil and incorporated did not affect turfgrass germination or growth
REFERENCE: Moshier, L., A.J. Turgeon, and D. Penner, "Effects of Glyphosate and Siduron on Turf Grass Establishment," Weed Sci. 24(5):445-448 (1976).

<5218>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-methoxy-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Picloram
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1x 10(-4), 1x 10(-6), and 1x 10(-8) M
APPLICATION METHODS: Herbicide incorporation in tissue culture agar nutrient medium
EXPERIMENTAL CONDITIONS: Laboratory study; tissue culture; tissue source--soybean cotyledons; herbicides incorporated into nutrient growth medium; temperature--30 C; incubation time--15 days
EFFECTS: Significant reduction in tissue growth at 10(-4) M and 10(-6) M but not at 10(-8) M; in combination with dicamba--significant reduction at two higher concentrations with no effect at 10(-8) M; in combination with 2,4,5-T-- significant reduction in growth at two higher concentrations and increased growth at 10(-8) M
COMMENTS: Combinations of 2,4,5-T, dicamba, or picloram not more phytotoxic than each herbicide applied alone; similar mechanisms of action postulated
REFERENCE: Bovey, R.W., J.R. Baur, and J.D. Diaz-Colon, "Phytotoxicity of 2,4,5-T, Picloram, and Dicamba, Alone and in Mixtures in Tissue Culture," Weed Sci. 22(2):191-192 (1974).

<5219>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-methoxy-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Prometone
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2) M, 10(-3), and 10(-4) M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: No effect at any application rates
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<5220>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-methoxy-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Prometone
PLANT: Flax (LINUM USITATISSIMUM); Beet, sugar (BETA VULGARIS); Buckwheat (FAGOPYRUM ESCULENTUM)
EXPERIMENTAL DOSE: 0.4 and 0.8 mg/100 g soil
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--20 to 23 C (day) and 15 to 17 C (night); RH--60 to 85%; evaluation time--up to 28 da
EFFECTS: Reduced growth

<5220>
<5220> CONT.
COMMENTS: Triazine herbicides exerted increasing inhibitory effect on dry and fresh weight yields, transpiration, and growth of seedlings of flax, beet and buckwheat; enhanced accumulation of free amino acids and decrease of simple sugar values noted in aboveground parts of test plants; results interpreted as secondary effects of inhibitory action of triazines on plant photosynthesis; toxicity of tested chemicals to flax, beet, and buckwheat decreased in following order: atrazine, simazine, propazine, atratone, prometone and prometryne; flax more resistant to triazines than beets and buckwheat
REFERENCE: Ploszynski, M. and H. Zurawski, "The Phytotoxic Action of Triazine Herbicides on Flax, Beets, and Buckwheat Seedlings, and Some Physiological Changes Connected With It," Acta Agrobot. 24(2):206-215 (1971).

<5221>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-methoxy-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Prometone
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310 silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in all plants at 1 and 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 and 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<5222>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-methoxy-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Prometone
PLANT: Plants
EXPERIMENTAL DOSE: 1.0 to 6.0 gal/A
APPLICATION METHODS: Postemergence spray; two applications
EXPERIMENTAL CONDITIONS: Field study, road cracks and road right-of-way
EFFECTS: Effective weed control for 12 mos
COMMENTS: Initial postpaving treatment made with beginning of growth in spring; TCA applied at rate of 24 lb/ft-mile, and subsequent applications made as needed; treatment interval about 30 days
REFERENCE: McCully, W. G., W. J. Bowmer, and A. F. Wiese, "Control of Grasses and Weeds Growing in Asphalt Pavements," PANS 16(3):497-504 (1970).

<5223>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-methoxy-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Prometone
PLANT: Cogongrass (IMPERATA CYLINDRICA)
EXPERIMENTAL DOSE: 22.4, 44.8, and 67.2 kg/ha
APPLICATION METHODS: Postemergence spray; 300 l./ha; 0.5% surfactant
EXPERIMENTAL CONDITIONS: Field study; pure cogongrass stands in near-dormant state; time period--1971 and 1972
EFFECTS: Effective control at highest rate but moderate control at lowest rates; regrowth after one year
COMMENTS: All soil sterilants provided acceptable control; single applications of TCA and dalapon controlled cogongrass without prolonged soil sterility
REFERENCE: Dickens, R. and G.A. Buchanan, "Control of Cogongrass with Herbicides," Weed Sci. 23(3):194-197 (1975).

<5224>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-methoxy-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Prometone
PLANT: Grasses; Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.5 to 6.0 lb/A
APPLICATION METHODS: Preemergence incorporated (1.5 in. depth); spray--75 gal/A
EXPERIMENTAL CONDITIONS: Field study; three locations; soils--Temple silty clay loam and Merced clay complex; sprinkler irrigation; time period--1959 and 1960; evaluation time--up to 75 days
EFFECTS: No control of weeds or adverse effect on cotton
COMMENTS: Herbicide performance markedly altered by soil incorporation, depth of incorporation, crop seed placement, soil type, and rainfall; of 25 herbicides studied, CDAA and CIPC and mixtures of them showed most promise
REFERENCE: Kempen, H.M., J.H. Miller, and L.M. Carter, "Preemergence Herbicides Incorporated in Moist Soils for Control of Annual Grass in Irrigated Cotton," Weeds 11(4):300-307 (1963).

<5225>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-methoxy-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Prometone
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats,

<5225> CONT.
herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious injury to all plants at 1.5 lb/A, serious injury to sorghum, soybean, and crabgrass and moderate injury to corn and cottong at 0.5 lb/A; preemergence subsurface--some results as surface application; postemergence--serious crabgrass injury at 1.0 and 2.0 lb/A, moderate injury at 0.5 lb/A
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5226>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-methoxy-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Prometone
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 1.0, 2.0, and 4.0 lb/A
APPLICATION METHODS: Addition to soil, mixed by blending 5 or 10 min.
EXPERIMENTAL CONDITIONS: Greenhouse study; flat culture; daily watering; evaluation time--7 wk; inhibition studied at 5 to 30 C
EFFECTS: Reduced growth especially at 25 to 30 C
COMMENTS: High temperature greatly accelerated herbicide toxicity, but effects of temperature varied greatly among herbicides; atrazine and simazine more toxic than other herbicides tested at all temperatures; toxicity of simazine and atrazine apparent early, whereas effects of propazine, prometryne, prometone, and ipazine somewhat delayed
REFERENCE: Kozlowski, T.T., S. Sasaki, and J.H. Torrie, "Influence of Temperature on Phytotoxicity of Triazine Herbicides to Pine Seedlings," Amer. J. Bot. 54(6):790-796 (1967).

<5227>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-methoxy-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Prometone
PLANT: (BORRERIA VERTICILLATA)
EXPERIMENTAL DOSE: 20.0 and 40.0 lb/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study; time period--1960 to 1962
EFFECTS: Little or no effect
COMMENTS: B. VERTICILLATA Meyer killed by selective rates of fenac, but not by selective rates of nine of most common phenoxy herbicides; also killed by soil-sterilant rates of diuron and 2,3,6-TBA but not by soil-sterilant rates of three s-triazine compounds
REFERENCE: Kasasian, L., "The Chemical Control of BORRERIA VERTICILLATA," Weeds 12(2):146 (1964).

<5228>
CHEMICAL NAME: 1,3,5-Triazine-2,4-diamine, 6-methoxy-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: Prometone
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time--11 da
EFFECTS: Minimum lethal concentration 5.95 to 4.15 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5229>
CHEMICAL NAME: 1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, 1,3-dichloro-, sodium salt
CHEMICAL COMMON NAME: Sodium dichloroisocyanurate
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<5230>
<5230>
CHEMICAL NAME: 1,3,5-Triazine, 2-(diethylamino)-4-(isopropylamino)-6-methoxy-
CHEMICAL COMMON NAME: Ipatone
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious injury to soybean and crabgrass at 1.5 lb/A and to crabgrass at 0.5 lb/A, moderate injury to corn, sorghum, and cotton at 1.5 lb/A and to sorghum at 0.5 lb/A; preemergence subsurface--injury slightly more pronounced than surface treatment; postemergence--serious crabgrass injury at 2.0 lb/A, moderate injury at other rates
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5231>
CHEMICAL NAME: 1,3,5-Triazine, 2-amino-4-(1-methylethylamino)-6-methylmercapto-
CHEMICAL COMMON NAME: GS-11354
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da
EFFECTS: Moderate to severe damage or kill of all plants
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5232>
CHEMICAL NAME: 1,3,5-Triazine, 2-amino-4-methylmercapto-6-propylamino-
CHEMICAL COMMON NAME: GS-11353
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da
EFFECTS: Moderate to severe damage or kill of all plants
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5233>
CHEMICAL NAME: 1,3,5-Triazine, 2-butoxy-4,6-dichloro-
CHEMICAL COMMON NAME: TR-14
PLANT: Chickweed (AGERATUM CONYZOIDES); Beet (BETA sp.); Tomato (LYCOPERSICON ESCULENTUM); Oat (AVENA SATIVA); Bean, kidney (PHASEOLUS VULGARIS); Lamb's-quarters (CHENOPODIUM ALBUM); Chickweed, common (STELLARIA MEDIA); Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 1% solution (equivalent to 10 kg/ha)
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; field study
EFFECTS: Plants all killed except oats and bluegrass which were damaged
COMMENTS: Geigy 444 caused only slight damage to plant growth; with other s-triazines, all weeds killed with exception of blue grass, which recovered after a time; new triazines promising as pre-emergence herbicides
REFERENCE: Koopman, H., J.H. Uhlenbroek, and J. Daams, "New S-Triazine Herbicides," Nature 180(4577):147-148 (1957).

<5234>
CHEMICAL NAME: 1,3,5-Triazine, 2-chloro-4-(ethoxyoxoacetyl)ethylamino-6-(1-methyethylamino)-
CHEMICAL COMMON NAME: R-3140
PLANT: Corn (ZEA MAYS); Nutsedge, yellow (CYPERUS ESCULENTUS); Foxtail, giant (SETARIA FABERI); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Preplant incorporated (2-3 in.) spray; 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Mattapex silt loam; time period--1974 and 1975
EFFECTS: Effective weed control with slight initial damage to corn but increase yield
COMMENTS: Best control of weed species achieved with combination of materials; only RP-20630 and RP-15018, at high rates, caused corn injury and reduced yields
REFERENCE: Parochetti, J.V., G.W. Burt, and A.W. Bell, "Triazines, Acetanilides, and Several Other Herbicides for Weed Control in Corn," Proc. N.E. Weed Sci. Soc. 30:48-54 (1976).

<5235>
CHEMICAL NAME: 1,3,5-Triazine, 2-chloro-4-(1-methylethylamino)-6-[(3methoxy)propylamino]-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious soybean and crabgrass injury and moderate injury to sorghum and cotton at 1.5 lb/A, moderate injury to all but sorghum and corn (minor) at 0.5 lb/A; preemergence subsurface--injury more pronounced than surface treatment, serious injury also to cotton; postemergence--moderate crabgrass injury
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5236>
CHEMICAL NAME: 1,3,5-Triazine, 2-chloro-4-(1-methylethylamino)-6-propylamino-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5 and 1.5 lb/A
APPLICATION METHODS: Preemergence surface and preemergence subsurface treatments
EXPERIMENTAL CONDITIONS: Greenhouse study; seeds sown in 3.5 X 10 X 14 in. metal flats; herbicide applied to seed and then covered with soil for subsurface test; for surface test herbicide applied to soil after seed is covered
EFFECTS: Surface--moderate injury to soybean and crabgrass at 1.5 lb/A and to crabgrass at 0.5 lb/A, minor injury to other plants; subsurface--injury more pronounced, serious injury to soybean at 1.5 lb/A
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5237>
CHEMICAL NAME: 1,3,5-Triazine, 2-chloro-4-ethylamino-6-[(3-methoxy)propylamino]-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious injury to crabgrass and moderate injury to sorghum and soybean at 1.5 lb/A, moderate sorghum, soybean, and crabgrass injury at 0.5 lb/A, minor injury to other plants; preemergence subsurface--injury more pronounced than in surface treatment, serious injury also to soybean; postemergence--minor to moderate crabgrass injury
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5238>
CHEMICAL NAME: 1,3,5-Triazine, 2-cyano-4-ethylamino-6-(1-methylethylamino)-
CHEMICAL COMMON NAME: GS-10293
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da
EFFECTS: Severe damage or kill of all species except corn (slight) at 4.0 lb/A
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5239>
CHEMICAL NAME: 1,3,5-Triazine, 2-diethylamino-4-(1-methylethylamino)-6-methylmercapto-
CHEMICAL COMMON NAME: GS-11348
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da
EFFECTS: Severe damage or kill of all species except corn (slight) at 4.0 lb/A
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5240>
<5240>
CHEMICAL NAME: 1,3,5-Triazine, 2-diethylamino-4-[N-(1-methylethyl)acetamido]-6-methoxy-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5 and 1.5 lb/A
APPLICATION METHODS: Preemergence surface and preemergence subsurface treatments
EXPERIMENTAL CONDITIONS: Greenhouse study; seeds sown in 3.5 X 10 X 14 in. metal flats; herbicide applied to seed and then covered with soil for subsurface test; for surface test herbicide applied to soil after seed is covered
EFFECTS: Minor plant injury from surface and subsurface treatments
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5241>
CHEMICAL NAME: 1,3,5-Triazine, 2-ethoxy-4,6-bis[N-(1-methylethyl)acetamido]-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5 and 1.5 lb/A
APPLICATION METHODS: Preemergence surface and preemergence subsurface treatments
EXPERIMENTAL CONDITIONS: Greenhouse study; seeds sown in 3.5 X 10 X 14 in. metal flats; herbicide applied to seed and then covered with soil for subsurface test; for surface test herbicide applied to soil after seed is covered
EFFECTS: Surface--moderate corn injury at 1.5 lb/A and minor injury at 0.5 lb/A, minor injury to other plants; subsurface--no injury to cotton, minor injury to other plants
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5242>
CHEMICAL NAME: 1,3,5-Triazine, 2-ethylamino-4-(1-methylethylamino)-6-methylmercapto-
CHEMICAL COMMON NAME: Atrametryne
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious injury to sorghum, soybean, and crabgrass at 1.5 lb/A and to sorghum and crabgrass at 0.5 lb/A, moderate injury to corn and minor injury to cotton at 0.5 lb/A; preemergence subsurface--injury more pronounced than surface treatment; postemergence--serious crabgrass injury
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5243>
CHEMICAL NAME: 1,3,5-Triazine, 2-ethylamino-4-methoxypropylamino-6-methylmercapto-
CHEMICAL COMMON NAME: GS-12344
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da
EFFECTS: Severe damage or kill of all species except corn (slight) at 4.0 lb/A
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5244>
CHEMICAL NAME: 1,3,5-Triazine, 2-ethylamino-4-methylamino-6-methylmercapto-
CHEMICAL COMMON NAME: GS-11347
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da
EFFECTS: Kill of all plant species
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5245>
CHEMICAL NAME: 1,3,5-Triazine, 2-ethylamino-4-methylmercapto-6-propylamino-
CHEMICAL COMMON NAME: GS-11349
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS PETROPLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da
EFFECTS: Moderate to severe damage or kill of all plants
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5246>
CHEMICAL NAME: 1,3,5-Triazine, 2-ethylamino-4,6-bis(1-methylethylamino)-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5 and 1.5 lb/A
APPLICATION METHODS: Preemergence surface and preemergence subsurface treatments
EXPERIMENTAL CONDITIONS: Greenhouse study; seeds sown in 3.5 X 10 X 14 in. metal flats; herbicide applied to seed and then covered with soil for subsurface test; for surface test herbicide applied to soil after seed is covered
EFFECTS: Surface--moderate injury to crabgrass at 1.5 lb/A, minor injury to other plants and to crabgrass at 0.5 lb/A; subsurface--injury somewhat more pronounced
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5247>
CHEMICAL NAME: 1,3,5-Triazine, 2-ethylamino-6-methylamino-4-(1-methylethylamino)-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5 and 1.5 lb/A
APPLICATION METHODS: Preemergence surface and preemergence subsurface treatments
EXPERIMENTAL CONDITIONS: Greenhouse study; seeds sown in 3.5 X 10 X 14 in. metal flats; herbicide applied to seed and then covered with soil for subsurface test; for surface test herbicide applied to soil after seed is covered
EFFECTS: Surface--moderate injury to crabgrass at 1.5 lb/A, minor injury to other plants and to crabgrass at 0.5 lb/A; subsurface--injury somewhat more pronounced
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5248>
CHEMICAL NAME: 1,3,5-Triazine, 2-methoxy-4,6-bis(3-methoxypropylamino)-
CHEMICAL COMMON NAME: G-34690
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 6.28 to 5.78 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5249>
CHEMICAL NAME: 1,3,5-Triazine, 2-methoxy-4,6-bis[(3-methoxy)propylamino]-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious injury to crabgrass and moderate injury to sorghum at 1.5 lb/A, moderate injury to crabgrass at 0.5 lb/A, minor injury to other plants; preemergence subsurface--injury more pronounced than surface treatment but crabgrass still is only one seriously damaged; postemergence--serious crabgrass injury at all rates
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5250>
<5250>
CHEMICAL NAME: 1,3,5-Triazine, 2-N-ethylacetamido-6-methoxy-4-N-(1-methylethyl)acetamido-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5 and 1.5 lb/A
APPLICATION METHODS: Preemergence surface and preemergence subsurface treatments
EXPERIMENTAL CONDITIONS: Greenhouse study; seeds sown in 3.5 X 10 X 14 in. metal flats; herbicide applied to seed and then covered with soil for subsurface test; for surface test herbicide applied to soil after seed is covered
EFFECTS: Surface--all injuries minor except crabgrass at 1.5 lb/A (moderate) and cotton (no injury); subsurface--injuries more pronounced
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5251>
CHEMICAL NAME: 1,3,5-Triazine, 2,4-bis(ethylamino)-6-(1-methylethylamino)-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5 and 1.5 lb/A
APPLICATION METHODS: Preemergence surface and preemergence subsurface treatments
EXPERIMENTAL CONDITIONS: Greenhouse study; seeds sown in 3.5 X 10 X 14 in. metal flats; herbicide applied to seed and then covered with soil for subsurface test; for surface test herbicide applied to soil after seed is covered
EFFECTS: Surface--moderate injury to crabgrass at 1.5 lb/A, minor injury to other plants and to crabgrass at 0.5 lb/A; subsurface--injury somewhat more pronounced
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5252>
CHEMICAL NAME: 1,3,5-Triazine, 2,4-bis(ethylamino)-6-ethylmercapto-
CHEMICAL COMMON NAME: GS-35123
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da
EFFECTS: Moderate to severe damage or kill of all plants
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5253>
CHEMICAL NAME: 1,3,5-Triazine, 2,4-bis(ethylamino)-6-trichloromethyl-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5 and 1.5 lb/A
APPLICATION METHODS: Preemergence surface and preemergence subsurface treatments
EXPERIMENTAL CONDITIONS: Greenhouse study; seeds sown in 3.5 X 10 X 14 in. metal flats; herbicide applied to seed and then covered with soil for subsurface test; for surface test herbicide applied to soil after seed is covered
EFFECTS: Surface--serious injury to crabgrass at 1.5 lb/A and moderate injury at 0.5 lb/A, minor injury to other plants; subsurface--crop injury generally more pronounced, crabgrass injury slightly less
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5254>
CHEMICAL NAME: 1,3,5-Triazine, 2,4-bis(N-ethylacetamido)-6-methoxy-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5 and 1.5 lb/A
APPLICATION METHODS: Preemergence surface and preemergence subsurface treatments
EXPERIMENTAL CONDITIONS: Greenhouse study; seeds sown in 3.5 X 10 X 14 in. metal flats; herbicide applied to seed and then covered with soil for subsurface test; for surface test herbicide applied to soil after seed is covered
EFFECTS: Surface--minor injury, more evident in crabgrass; subsurface--injury more pronounced, moderate injury to soybean and crabgrass at 1.5 lb/A
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5255>
CHEMICAL NAME: 1,3,5-Triazine, 2,4-bis(N-ethylbenzamido)-6-methoxy-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5 and 1.5 lb/A
APPLICATION METHODS: Preemergence surface and preemergence subsurface treatments
EXPERIMENTAL CONDITIONS: Greenhouse study; seeds sown in 3.5 X 10 X 14 in. metal flats; herbicide applied to seed and then covered with soil for subsurface test; for surface test, herbicide applied to soil after seed is covered
EFFECTS: Surface--minor injury, crabgrass injury more pronounced, no injury to cotton; subsurface--serious crabgrass injury at 1.5 lb/A, moderate corn, sorghum, and soybean injury at 1.5 lb/A, minor cotton injury at 0.5 lb/A but no cotton injury at 1.5 lb/A
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5256>
CHEMICAL NAME: 1,3,5-Triazine, 2,4-bis(2-propenylamino)-6-methylmercapto-
CHEMICAL COMMON NAME: GS-11356
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da
EFFECTS: Moderate to severe damage of all plant species except corn (slight) at 4.0 lb/A
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5257>
CHEMICAL NAME: 1,3,5-Triazine, 2,4-diamine, 6-(ethylthio)-N,N'-bis(1-methylethyl)-
CHEMICAL COMMON NAME: GS-16068
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 0.56, 1.12, and 2.24 kg/ha
APPLICATION METHODS: Postemergence (early and late) spray; 188 l./ha (early) and 235 l./ha (late, directed spray); X-77 surfactant (0.5%)
EXPERIMENTAL CONDITIONS: Field study; soil-Cecil sandy clay loam; time period--1969 to 1971
EFFECTS: Effective control of grasses with moderate control of broadleaf weeds and no adverse effect on sunflower
COMMENTS: Excellent grass control and poor broadleaf weed control obtained from early postemergence treatments of RP 17623 when applied as over-the-top spray at either cotyledon or first-leaf stage of sunflower growth, weed control results similar to RP 17623 from several herbicides applied as late-directed postemergence sprays; early postemergence treatments with RP 17623 caused some early injury to sunflower plants and reduction in achene oil percent when compared with achenes from untreated plants, but achene yields not reduced
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Postemergence on Weeds and Sunflowers," Crop Sci. 12(1):695-697 (1972).

<5258>
CHEMICAL NAME: 1,3,5-Triazine, 2,4-diamine, 6-azido-N-(1,1-dimethylethyl)-N'-ethyl-
PLANT: Foxtail, slender (ALOPECURUS MYOSUROIDES); Meadowgrass, rough stalked (POA TRIVIALIS); Timothy (PHLEUM PRATENSE); Fescue, tall (FESTUCA ARUNDINACEA); Ryegrass, Italian (LOLIUM MULTIFLORUM); Ryegrass, perennial (LOLIUM PERENNE); Fescue, meadow (FESTUCA ELATIOR); Cocksfoot
EXPERIMENTAL DOSE: 32, 48, 64, and 96 oz/A
APPLICATION METHODS: Preplanting, preemergence, and postemergence sprays
EXPERIMENTAL CONDITIONS: Clay or heavy clay soils; 1966-67 and 1967-78 main trials, wet weather hampered 1966-67 trial thus study emphasis on 1967-68 trial; spraying dates of 8/22/67, 9/22/67, 1/4/68, 3/4/68, and 3/5/68; 2 to 3 replicates; average for all crop grasses reported
EFFECTS: Crop grasses--minor injury at 11 wk with 64 oz/A, complete tolerance to 96 oz/A at 35 wk; A. MYOSUROIDES--no control from treatment 23 wk before sowing, moderate preemergence control at 64 oz/A, good preemergence control at 96 oz/A, good control at 1 leaf stage at 64 oz/A, no control when well tillered; P. TRIVIALIS--good preemergence control at 64 oz/A, excellent control at 1 leaf stage with 64 oz/A, no control when well tillered
COMMENTS: Crop grasses sown 7/5/67, weed grasses sown 8/21/67, 9/18/67, and 2/29/68
REFERENCE: Shildrick, J.P. and T.J. Arthur, "Control of ALOPECURUS MYOSUROIDES (Blackgrass) and POA TRIVIALIS (Routh-stalked Meadow Grass) in Grass Seed Crops by Herbicides," Nat. Inst. Agric. Bot. (Cambridge) Rep. Acc. 11(2):361-369 (1968).

<5259>
CHEMICAL NAME: 1,3,5-Triazine, 4-(1-methylethylamino)-6-methylmercapto-2-(2-propenylamino)-
CHEMICAL COMMON NAME: GS-11359
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da

<5259>
<5259> CONT.
EFFECTS: Moderate to severe damage or kill of all plants
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5260>
CHEMICAL NAME: 1,3,5-Triazine, 4-chloro-6-(1-methylethylamino)-2-(2-propen-1-amino)-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5 and 1.5 lb/A
APPLICATION METHODS: Preemergence surface and preemergence subsurface treatments
EXPERIMENTAL CONDITIONS: Greenhouse study; seeds sown in 3.5 X 10 X 14 in. metal flats; herbicide applied to seed and then covered with soil for subsurface test; for surface test herbicide applied to soil after seed is covered
EFFECTS: Surface--moderate injury to soybean and crabgrass at 1.5 lb/A, minor injury to other plants at both rates; subsurface--more pronounced injury
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5261>
CHEMICAL NAME: 1,3,5-Triazine, 4-chloro-6-beta-methoxyethylamino-2-(2-propenylamino)-
CHEMICAL COMMON NAME: GS-11609
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da
EFFECTS: Moderate to severe damage or kill of all species except corn and ryegrass (slight) at 4.0 lb/A
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5262>
CHEMICAL NAME: 1,3,5-Triazine, 4-chloro-6-methoxypropylamino-2-propenylamino-
CHEMICAL COMMON NAME: GS-11851
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da
EFFECTS: Moderate to severe damage or kill of all plants
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5263>
CHEMICAL NAME: 1,3,5-Triazine, 4-ethylamino-6-isobutylamino-2-methoxy-
CHEMICAL COMMON NAME: GS-14254
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature-- 24C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Poor control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<5264>
CHEMICAL NAME: 1,3,5-Triazine, 4-methoxy-6-methoxyethylamino-2-(1-methylethylamino)-
CHEMICAL COMMON NAME: GS-36392
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da

<5264> CONT.
EFFECTS: Severe damage or kill of all species except corn (slight) at 4.0 lb/A
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5265>
CHEMICAL NAME: 1,3,5-Triazine, 4-methoxy-6-methylamino-2-(1-methylethylamino)-
CHEMICAL COMMON NAME: Noratone
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM VULGARE); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM); Crabgrass, hairy (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.5, and 2.0 lb/A
APPLICATION METHODS: Preemergence surface and subsurface (0.5 and 1.5 lb/A) and postemergent directed treatments (0.5, 1.0, and 2.0 lb/A)
EXPERIMENTAL CONDITIONS: Preemergence--greenhouse study, seeds sown in 3.5 X 10 X 14 in. metal flats, herbicide applied to seed and then covered with soil for subsurface test and applied to soil after seed was covered for surface test; postemergence--cotton and crabgrass seeds sown, herbicide applied with cotton at 4 to 7 in. and crabgrass at 1 to 2.5 in.
EFFECTS: Preemergence surface--serious injury to all but corn (moderate injury) at 1.5 lb/A and to crabgrass at 0.5 lb/A, moderate injury to others at 0.5 lb/A; preemergence subsurface--serious injury to all at 1.5 lb/A and to crabgrass, cotton, and soybean at 0.5 lb/A, moderate injury to corn and sorghum at 0.5 lb/A; postemergence--seirous crabgrass injury at 2.0 lb/A, moderate injury at 0.5 and 1.0 lb/A
COMMENTS: Study compared effectiveness of 29 s-triazine compounds
REFERENCE: Sheets, T.J. and W.C. Shaw, "Herbicidal Properties and Persistence in Soils of s-Triazines," Weeds 11(1):15-21 (1963).

<5266>
CHEMICAL NAME: 1,3,5-Triazine, 4-methylmercapto-2-(2-propenylamino)-6-propylamino-
CHEMICAL COMMON NAME: GS-11360
PLANT: Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Oat (AVENA SATIVA); Safflower (CARTHAMUS TINCTORIUS); Ryegrass, Italian (LOLIUM MULTIFLORUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS)
EXPERIMENTAL DOSE: 2.0, 4.0, and 8.0 lb/A; EC or WP
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--21 da
EFFECTS: Moderate to severe damage or kill of all plants
COMMENTS: Postemergence activity and specificity of 16 s-triazines on 8 test species determined at 3 application rates; influence of various substitutions discussed
REFERENCE: Gentner, W.A., "Herbicidal Activity of Several s-Triazines as Postemergence Sprays," Weeds 12(2):115-117 (1964).

<5267>
CHEMICAL NAME: 1,3,6-Triazine, 2,4-diketo-, sodium salt
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 C; evaluation time---11 da
EFFECTS: Minimum lethal concentration 3.94 and 3.73 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5268>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-
CHEMICAL COMMON NAME: Chlorthal
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in all plants at 1 ppm, 50% or greater inhibition in sorghum and oat but less than 50% in cucumber at 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 ppm, 50% or greater inhibition in sorghum but less than 50% in oat at 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<5269>
<5269>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 8-12 ppm (soil); 20 microliters--4x10(-3)m (topical application to hypocotyls)
APPLICATION METHODS: Soil application; topical application (C-14-labeled DCPA) to hypocotyl
EXPERIMENTAL CONDITIONS: Growth chamber; light--14 hr at 30 C; dark--10 hr at 18 C; time 4 wk
EFFECTS: Localized swelling; cellular efects; altered tissue differentiation; development of undifferentiated tissue in parenchyma cells of xylem and phloem; disrupted xylem; oxalate accumulation in hypocotyl tissue
COMMENTS: Abnormal behavior of cell nuclei occurred resulting in development of multinucleate cells and other effects observed; C-14-methyl labeled DCPA used
REFERENCE: Anderson, J.L. and B. Shaybany, "Effects of DCPA on Tomato Hypocotyl Tissue," Weed Sci. 20(5):434-439 (1972).

<5270>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Plants; Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 8.0 lb/A
APPLICATION METHODS: Posttransplant (same day)
EXPERIMENTAL CONDITIONS: Field study; evaluation time--aprox. 3 mos
EFFECTS: Moderate control of weeds with no adverse effect on chrysanthemum yield
COMMENTS: Excellent weed control obtained with number of herbicides; only R-7465 and diphenamid used as soil surface treatments and bensulide gave unsatisfacotry control; various herbicide treatments found to affect growth of chrysanthemum plants to different degrees
REFERENCE: Welker, W.V. and J.C. Cialone, "An Evaluation of Herbicides for the Control of Weeds in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 26:51-54 (1972).

<5271>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Bean, kidney (PHASEOLUS VULGARIS); Linseed (LINUM USITATISSIMUM); Wheat (TRITICUM AESTIVUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: .001 to 0.100% of MW of DCPA
APPLICATION METHODS: Postemergence spray; in field--100 gal/A; sodium, triethanolamine, and n-butyl Formulations
EXPERIMENTAL CONDITIONS: Greenhouse study (bean and flax), soil--Dickson grey-brown clay; field study (wheat and barley), soil--Dickson grey-brown clay
EFFECTS: Reduced yield of bean, reduced wheat yield when application made to seedlings (triethanolamine and n-butyl formulations) or to flowers (n-butyl) with no adverse effect on yield of flax or barley
COMMENTS: Wheat exhibited differential responses to phenoxyacetic acid compounds and isopropyl phenylcarbamate at different growth stages; applications of four phenoxyacetic acid compounds to wheat at different stages of development, from late seedling to flowering, showed grain yields reduced most markedly by applications in seedling stage; isopropyl phenylcarbamate had no effect on wheat in late seedling or tillering stages, but severely depressed yield of grain when applied at flowering; barley responded similarly; higher concentrations applied to wheat at pre-shooting also reduced grain yields
REFERENCE: Moore, R.M., "Differential Effects of Certain Phenoxyacetic Acid Compounds and Phenylcarbamates on Plant Species," Austral. J. Agric. Res. 1:401-412 (1950)

<5272>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Purslane, common (PORTULACA OLERACEA); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 9, 10 and 18 lb/A
APPLICATION METHODS: Formulation --75% WP and 5% G; granules applied with augerfeed applicator calibrated for each treatment; sprays applied in 50 gallon solution per acre; postplanting application
EXPERIMENTAL CONDITIONS: Chrysanthemums commercially grown two seasons on gravelly sandy loam; roots dipped in activated carbon to reduce herbicide injury to chrysanthemums
EFFECTS: First growing season, sprays at 9 or 18 lb/A controlled purslane for 2 months; second growing season, second month control satisfactory only with 18 lb/A; slight chrysanthemum vigor reduction obtained at 18 pounds/acre, second growing season; 10 lb/A granular DCPA applied as supplementary treatment showed no chrysanthemum injury
COMMENTS: During first growing season, flooding affected herbicide incorporation and chrysanthemum growth; no treatment controlled weeds all season without injury to chrysanthemums; use of multiple applications not thoroughly investigated; suggestions given for sequential herbicide use
REFERENCE: Ahrens, J.F., "Weed Control in Field-Grown Chrysanthemums," Proc. Northeast. Weed Sci. Soc. 28:386-394(1974).

<5273>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Cane, wild (SORGHUM BICOLOR); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 8 lb/A
APPLICATION METHODS: Field study; herbicide incorporated at 2-in. depth
EXPERIMENTAL CONDITIONS: Plots included wild cane planted at 1-and 4-in. depths
EFFECTS: Two experiments, about 35 and 70% wild cane control
COMMENTS: Herbicides more effective than cultivation, but combination gave best control of wild cane; trifluralin gave better control than vernolate and vernolate gave better control than DCPA; incorporation by rototilivator controlled wild cane better than rotary hoe incorporation
REFERENCE: Burnside, O.C., "Control of Wild Cane in Soybeans," Weed Sci. 16(1):18-22(1968).

<5274>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 11.2 and 22.4 kg/ha
APPLICATION METHODS: Granular application with calibrated 0.9 m-wide lawn spreader; preemergence application in July
EXPERIMENTAL CONDITIONS: Emory clay loam soil; 4 year experiment with fourth year used to determine recovery -- no herbicide application; randomized complete block design with 3 replications and a check; plots measured 0.9 by 4.8 m with 0.3-m border between plots; no border between replications; injury determined by sod loss and foliar damage; lowest rates of application halved, plots treated with high rates applied four times
EFFECTS: First year -- moderate browning persisting into fall dormancy; second year -- moderate browning and significant sod loss; third year -- moderate to severe foliar injury and sod loss; fourth year -- persistence of foliage wilt at low rates, slight foliage browning and sod loss at high rates
COMMENTS: In general, herbicide effectiveness increases with consecutive annual applications
REFERENCE: Callahan, L.M., "Phytotoxicity of Herbicides to a Tifgreen Bermudagrass Green," Weed Sci. 24(1):92-98(1976).

<5275>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 4.48 and 6.72 kg/ha
APPLICATION METHODS: Preemergence application with an Oxford Precision Sprayer at a rate of 280 l./ha and at 2 kg/cm2 pressure
EXPERIMENTAL CONDITIONS: Sandy loam soil; spinach plants 10 cm apart in rows 1 m apart; plot -- 3 rows 3 m long; 4 replications of each treatment; weeds per 930 cm were counted; plants harvested from center of each plot 37 days after emergence
EFFECTS: 50% reduction in spinach yield; good control of lamb's-quarters at either rate, redroot pigweed at high rate, and crabgrass at high rate; spinach petiole nitrate significantly increased
COMMENTS: Increase in plant nitrate can result from soil or lowered nitrate reductase activity; authors think that decrease in some phase of nitrate reduction by herbicide action is responsible for nitrate accumulation
REFERENCE: Cantliffe, D.J. and S.C. Phatak, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Spinach," Hortscience 9(5): 470-472 (1974).

<5276>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Yew (TAXUS INTERMEDIA); Chickweed, common (STELLARIA MEDIA); Primrose, cut-leaf evening (OENOTHERA LACINIATA); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 6.0, 8.0, and 10.5 lb/A
APPLICATION METHODS: Posttransplant spray; 374 l./ha at 30 psi
EXPERIMENTAL CONDITIONS: Field study; soil--low flatwood fine sands, subsurface irrigaton; time period--1970 to 1974
EFFECTS: Moderate to effective control of all weeds with no adverse effect on cabbage yield
COMMENTS: Most effective weed control obtained with alachlor, alachlor + CDEC, alachlor + DCPA, and DCPA + nitrofen; DCPA effective in controlling dock and chickweed, but controlled evening primrose less effectively, nitrofen provided excellent control of dock and fair to good control of evening primrose.
REFERENCE: Shumaker, J.R., "Chemical Weed Control in North Florida Cabbage," Fla. State Hort. Soc. 87:170-174 (1974).

<5277>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Plants; Lily-turf (LIRIOPE sp.)
EXPERIMENTAL DOSE: 9.0 and 14.0 lb/A
APPLICATION METHODS: Postemergence spray; 100 gal/A at 30-31 psi; TeeJet 8006E or 8004 nozzles; 75% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; time period--1967 to 1969
EFFECTS: Moderate control of all weeds with no adverse effect on LIRIOPE vigor
COMMENTS: Five best treatments for weed control from July 14 to October 1 were: terbacil 1.6 lb/A, dichlobenil, linuron, chlorpropham, and combination of chloroxuron + phenamid; following treatments were acceptable: dichlormate, trifluralin, chloramben, vernolate, and combination of dichlormate + diphenamid.
REFERENCE: Simms, J.W., C.W. Collier, and O.E. Schubert, "Chemical Weed Control in LIRIOPE (LILIACEAE)," West Va. Acad. Sci. 44(1):78-84 (1972).

<5278>
<5278>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: Chlorthal-dimethyl
PLANT: Oat (AVENA SATIVA); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 2 to 16 ppmw
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Environmental chamber; photoperiod--14 hr; temperature--30 C (day) and 18 C (night); pot culture
EFFECTS: Toxic to oats at 12 and 16 ppmw and to foxtail at 4 ppmw and higher concentrations
COMMENTS: Root and shoot growth of oat and green foxtail generally reduced proportionately to concentration of chlorthal dimethyl applied; foxtail shoot growth stimulated by 2 ppm; cells in shoot and root meristems of treated plants completely disarranged and considerably hypertrophied
REFERENCE: Shaybany, B. and J.L. Anderson, "Effect of Chlorthal Dimethyl on Oat and Foxtail Seedling Anatomy," Weed Res. 12(2):164-168 (1972).

<5279>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Grasses; Broadleaf weeds; Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 11.2 kg/ha
APPLICATION METHODS: Preemergence spray; 188 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil sandy loam or Cecil clay loam; time period--1969 to 1971
EFFECTS: Effective control of grasses and moderate control of broadleaf weeds with very slight damage to sunflower
COMMENTS: Alachlor applied in combination with either chlorpropham or prometryne satisfactorily controlled grasses and broadleaf weeds in sunflowers planted in April and June from 1969 through 1971; higher percentage of broadleaf weeds controlled with herbicides applied preemergence to sunflowers planted in April than when applied to sunflowers planted in June.
REFERENCE: Johnson, B.J., "Effects of Herbicides Applied Preplant or Preemergence on Weeds and Sunflowers," Crop Sci. 12(1):650-653 (1972).

<5280>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: Chlorthal-dimethyl
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Moderate control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<5281>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: Chlorthal
PLANT: Leucaena-browse legume (LEUCAENA LEUCOCEPHALA); (UROCHLOA PANICOIDES); Pigweed, black (TRIANTHEMA PORTULACASTRUM); Guineagrass (PANICUM MAXIMUM)
EXPERIMENTAL DOSE: 8.0, 8.4, and 16.8 kg/ha
APPLICATION METHODS: Preplanting incorporated
EXPERIMENTAL CONDITIONS: Experiment 1--greenhouse pot studies, incorporation in top 5 cm soil; experiment 2--field study, 3x3x2 factorial design with 2 replicates, 9.13 by 9.13 m plots, post-emergence cultivation; experiment 3--same as experiment 2 in design, effect of nitrogen studied in relation to herbicides and post-emergence cultivation; experiment 4--4x3 split plot factorial design, investigation of weed control techniques and nitrogen on leucaena establishment
EFFECTS: Pot studies--weeds suppressed and no detrimental effect on leucaena emergence at 8.4 kg/ha, 16.8 kg/ha reduced leucaena emergence; field studies--lower rates did not effect weed or leucaena growth on heavy self mulching loam, when well incorporated, 8 kg/ha controlled grassweeds but not broadleaf weeds and did not improve leucaena growth
COMMENTS: Leucaena growth not improved by addition of nitrogen up to 45 kg/ha; burning of windrows of logs on planting area--successful weed control and leucaena growth
REFERENCE: Cooksley, D.G., "A Study of Preplanting Herbicides, Nitrogen, Burning and Post-emergence Cultivation on the Establishment of LEUCAENA LEUCOCEPHALA cv. Peru," Queensl. J. Agric. Anim. Sci. 31(3):271-278 (1974).

<5282>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: Chlorthal-dimethyl
PLANT: Pimpernel, common (ANAGALLIS ARVENSIS); Crunchweed (SINAPIS ARVENSIS); Pigweed (AMARANTHUS sp.); Bindweed, field (CONVOLVULUS ARVENSIS)
EXPERIMENTAL DOSE: 7.5 and 15.0 kg/ha
APPLICATION METHODS: Postemergence application; 200 l./ha; trifluralin and chlorthal-dimethyl incorporated by rototilling; all others not incorporated
EXPERIMENTAL CONDITIONS: Field study; plots sprayed twice a year over a 4-year period; sprinkler irrigation; greenhouse study; residues determined by mustard bioassay
EFFECTS: Effective control of A. COERULEA and CONVOLVULUS; moderate control of S. ARVENSIS; no effect on AMARANTHUS; no residual phytotoxicity
COMMENTS: Phytotoxicity to weeds in decreasing order: diuron, bromacil, simazine, trifluralin, prometryne, neburon, fluometuron, pyrazon, diphenamid, chlorthal-dimethyl; persistence of herbicides in decreasing

<5282> CONT.
order: diuron, bromacil, simazine, neburon, fluometuron, trifluralin, prometryne; control produced by pyrazon improved with the number of applications, but that of diphenamid and chlorthal-dimethyl remained weak and short
REFERENCE: Horowitz, M., T. Blumenfeld, G. Herzlinger, and N. Hulin, "Effects of Repeated Applications of Ten Herbicides on Weed Population, Residue Accumulation and Nitrification," Weed Res. 14(2):97-109 (1974).

<5283>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Crabgrass, large (DIGITARIA SANGUINALIS); Bluegrass, annual (POA ANNUA); Parsley-piert (ALCHEMILLA MICROCORPA); Speedwell, corn (VERONICA ARVENSIS); Clover, hop (TRIFOLIUM AGARIUM); Bermudagrass, common (CYNODON DACTYLON); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 11.2 and 14.0 kg/ha
APPLICATION METHODS: Preemergence spray; broadcast application in 376 l./ha water
EXPERIMENTAL CONDITIONS: 3-year test on golf courses, 1-year test at Georgia Experiment Station; loam, sandy clay loam, and sandy loam soils; DCPA, benefin, terbutol, bensulide used as summer chemical checks, pronamide, DCPA, and terbutol used as winter chemical checks; 1.5 by 3.0 m plots, randomized complete block design with 4 replications; summer tests--crabgrass control in turfgrass; winter tests--control of annual bluegrass, parsley-piert, corn speedwell and hop clover; visual ratings
EFFECTS: Crabgrass control--78% avg. (25-99% range), 11 tests; bluegrass control--2 years, 13 and 54%; parsley-piert control--2 years, 0 and 45%; corn speedwell--2 years, 98 and 100%; hop clover-2 years, 73 and 83%; no significant injury to bermudagrass or Kentucky bluegrass
COMMENTS: Crabgrass summer experiments, 11.2 kg/ha DCPA; winter weed control, 14.0 kg/ha DCPA
REFERENCE: Johnson, B.J., "Herbicides for Seasonal Weed Control in Turfgrasses," Agron. J. 68:717-720 (1976).

<5284>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Bermudagrass, common (CYNODON DACTYLON); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 12.5 lb/A
APPLICATION METHODS: Preemergence broadcast treatment in 40 gpa
EXPERIMENTAL CONDITIONS: 3-year experiment; Cecil sandy loam; application in July, August, September, and October of all 3 years (1971-1973); 5 X 10 ft plots, split-plot design--dates of treatment as main plots, herbicide treatments as subplots with 4 replications; ratings made year following treatment
EFFECTS: Crabgrass not satisfactorily controlled
COMMENTS: No mention of bermudagrass toxicity
REFERENCE: Johnson, B.J., "Crabgrass Control in Common Bermudagrass Turf from Herbicides Applied the Previous Year," Ga. Agric. Res. 17(2):17-18 (1975).

<5285>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Ash, green (FRAXINUS PENNSYLVANICA); Poplar, yellow (LIRIODENDRON TULIPIFERA); Walnut, black (JUGLANS NIGRA); Pine, white (PINUS STROBUS); Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 18.0 and 28.0 kg/ha
APPLICATION METHODS: Posttransplant spray; 29 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Ross-Geneco complex
EFFECTS: Growth stimulation of hardwoods and no effect on evergreens
COMMENTS: Oxadiazon, napropamide and simazine produced very favorable results at low rates; simazine only injurious to green ash; diphenamid and DCPA effective without incorporation only at extremely high rates; tolerance range for Velpar and RP-23465 for use on newly planted seedlings appear very small; bifenox as used did not appear to be detrimental to seedlings
REFERENCE: Wiltrout, T.R. and H.A. Holt, "Prospects of Controlling Vegetation in New Forest Plantations," Proc. N. Cent. Weed Control Conf. 30:31-36 (1975).

<5286>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: Dacthal
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: Preemergence sprinkle
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Miller Clay; flat culture
EFFECTS: No adverse effect
COMMENTS: Any of chemicals could cause deleterious effects on growth of seedling cotton; UC 21149 employed safely in combination with herbicides Dacthal, diuron, chloro-IPC, and trifluralin
REFERENCE: Boling, J. C. and J. Hacskaylo, "Effect of the Systemic Insecticide UC 21149 and Four Pre-Emergence Herbicides on Cotton Seedlings," J. Econ. Ent. 59(4):1026-1027 (1966).

<5287>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Pine, red (PINUS RESINOSA)
EXPERIMENTAL DOSE: 2.0 to 16.0 lb/A
APPLICATION METHODS: Added to soil and mixed
EXPERIMENTAL CONDITIONS: Germination chamber; temperature--75 F (day) and 72 F night; paper carton culture; soil--Plainfield sand; evaluation time--up to 54 da
EFFECTS: Slightly simulated germination and had no effect on growth
COMMENTS: Seed germination influenced only very slightly, or not at all, by variety of soil-incorporated herbicides; in contrast, all but one of soil-incorporated herbicides caused seedling mortality and

<5287>
<5287> CONT.
decreased dry-weight production of seedlings; greatest toxicity observed at highest dosages used; EPTC and CDAA at high dosages very toxic to tree seedlings, whereas DCPA showed no deleterious effects at any dosage
REFERENCE: Kozlowski, T.T. and J.H. Torrie, "Effect of Soil Incorporation of Herbicides on Seed Germination and Growth of Pine Seedlings," Soil Sci. 100(2):139-146 (1965).

<5288>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bluegrass, annual (POA ANNUA)
EXPERIMENTAL DOSE: 12.0 lb/A; 5.0% G
APPLICATION METHODS: Broadcast (G) with spreader; preemergence spray, 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; mature Kentucky bluegrass lawn; soils-sandy and loam; crabgrass seed sown on lawn just prior to applications
EFFECTS: Moderate control of grass weeds and no damage to turf
COMMENTS: A-820, CG-10832, PPG-139 and RP-17623 gave good crabgrass control; April versus May application of several of preemergence types show that specific guidelines are needed to obtain efficient crabgrass control; goosegrass control fair to good for several chemicals, but all materials considered poor to unsatisfactory
REFERENCE: Engel, R.E., C.W. Bussey, and P. Catron, "Crabgrass and Goosegrass Control in Turfgrass with Several Preemerge Herbicides," Proc. Northeast. Weed Sci. Soc. 29:369-371 (1975).

<5289>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Potato (SOLANUM TUBEROSUM); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Rye (SECALE CEREALE)
EXPERIMENTAL DOSE: 10 lb/A
APPLICATION METHODS: 75% WP preemergence spray at 20 psi pressure and 38 gal/A volume
EXPERIMENTAL CONDITIONS: April planting; plots--2 rows wide by 30 ft long; randomized complete block design; treatments replicated five times in experiments 1 and 3 and four times in others; total of 5 experiments; rye seeded following potato harvest
EFFECTS: Experiment 3--no phytotoxic effect on potato or rye crops, commercially unacceptable weed control
COMMENTS: Author notes that growing conditions (cool spring and high June rainfall) caused vigorous weed growth and retarded potato growth, thus reason for commercially unacceptable weed control; herbicide combinations also discussed
REFERENCE: Fricke, D.H., "Evaluation of Herbicides for Control of Nutsedge and Annual Weeds in Potatoes (1972)," Proc. Northeast. Weed Sci. Soc. 27:276-283 (1973).

<5290>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Cucumber (CUCUMIS SATIVUS); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 6.7 and 9.0 kg/ha
APPLICATION METHODS: Preplant spray; 170 l./ha; soil incorporation (5 cm depth); preemergence sprays for nitralin and chloramben
EXPERIMENTAL CONDITIONS: "
EFFECTS: Effective control of weeds with initial injury to lettuce but no reduction in yield
COMMENTS: DCPA and nitralin gave best weed control, while benefin and the methyl ester of chloramben less effective in controlling weeds; poorest weed control performance observed with bensulide; nitralin, DCPA, benefin, and methyl ester of chloramben caused crop injury if leaching rains followed application; despite early herbicide injury, yields usually not adversely affected
REFERENCE: Monaco, T.J. and Miller, C.H., "Herbicide Activity in Pickling Cucumber," Weed Sci. 20(6):545-548 (1972).

<5291>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Grasses; Broadleaf weeds; Nutsedge, purple (CYPERUS ROTUNDUS); Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 8.0 lb/A
APPLICATION METHODS: Postemergence spray (translanted cabbage); preplant incorporated spray (seeded cabbage); preemergence (snapbeans); sprays at 18 gal/A and 20 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Wickham fine sandy loam and Portsmouth fine sandy loam; time period--1969 to 1972
EFFECTS: Effective control of grass weeds and moderate control of broadleafs with no control of nutsedge and reduced yield of snapbean; alachlor appeared better
COMMENTS: Alachlor has potential for use on transplanted cabbage particularly in situations where annual broadleaved weeds present major problem; 3 lb/A optimum for most soil conditions and crop response; postemergence application of alachlor to direct-seeded cabbage injurious, much more so than when applied to transplanted cabbage; use of alachlor on cabbage will probably need to be restricted solely to transplanted crops; on snapbeans, alachlor had a narrow margin of crop safety
REFERENCE: Monaco, T.J. and J.B. Weber, "Alachlor-A Herbicide for Selected Vegetable Crops," Proc. S. Weed Sci. Soc. 26:205-214 (1973).

<5292>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM); Ladysthumb (POLYGONUM PERSICARIA); Cudweed, low (GNAPHALIUM ULIGONOSA); Broccoli (BRASSICA OLERACEA); Brussels sprouts (BRASSICA OLERACEA); Cabbage (BRASSICA OLERACEA); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 11.2 and 13.4 kg/ha
APPLICATION METHODS: Preplant spray soil incorporation by disking; preemergence spray
EXPERIMENTAL CONDITIONS: Field study; 5 year period
EFFECTS: Weeds moderately controlled at 13.4 kg/ha in preplant and preemergence applications with significant yield reduction of broccoli in only 1 of 4 years studied; no adverse effects on remaining vegetables
COMMENTS: Trifluralin, DCPA, and nitrofen gave eratic weed control and must be applied at highest rates of application permitted by label for even average weed control in most years; two new herbicides pryanchlor and DMC 3950 show promise for use on cole crops in Eastern Canada
REFERENCE: Ivany, J.A. and J.A. Cutcliffe, "Herbicides for Cole Crops in Eastern Canada," Proc. Northeast. Weed Sci. Soc. 27:194-198 (1973).

<5293>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: Dacthal
PLANT: Bluegrass, annual (POA ANNUA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 2.0 to 20.0 lb/A
APPLICATION METHODS: Preplant solution soak
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Puyallup fine sandy loam; pH--5.8; temperature--approx 60 F
EFFECTS: Effective bluegrass control at 10 lb and higher rates with no adverse effect on bentgrass
COMMENTS: Dacthal, betasan, dipropalin, trifluralin, and enide significantly controlled annual bluegrass for periods of 9 to 12 weeks; dacthal and betasan completely nonphytotoxic to mature turf
REFERENCE: Goss, R.L., "Preemergence Control of Annual Bluegrass (POA ANNUA L.)," J. Agron. 56(1):479-481 (1964).

<5294>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 6.0 and 12.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate control of weeds and no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<5295>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Sesame (SESAMUM INDICUM); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 8.0 lb/A
APPLICATION METHODS: Preplanting incorporated treatments applied with CO(2) sprayer
EXPERIMENTAL CONDITIONS: Panoche clay loam soil; field trials; 2.5 lb/A sesame planted, barley sown as weed crop
EFFECTS: Poor sesame tolerance and erratic barley control
REFERENCE: Fischer, B.B., "Herbicides for Weed Control in Seasame," Calif. Agric. 25(4):14-15 (1971).

<5296>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: Dacthal
PLANT: Plants; Croton, gold dust (CODIAEUM VARIEGATUM)
EXPERIMENTAL DOSE: 1, 2, 4, and 8X recommended rate (4 lb/A); EC
APPLICATION METHODS: Herbicide-impregnated mulches (0.75 in. over soil surface)
EXPERIMENTAL CONDITIONS: Field study; pot culture; lath shade; overhead sprinkle irrigation; evaluation time--up to 28 wk
EFFECTS: At 2X rate, moderate control of weeds with no adverse effect on CODAIEUM at 28 weeks
COMMENTS: No crop phytotoxicity observed from any treatment; weed control initially good with each herbicide except dacthal when soil incorporated; after 8 weeks, weeds noted in 1 and 2x rates of both simazine and treflan soil incorporation treatments; after 28 weeks excessive weed growth found in every soil-incorporation treatment except lasso and treflan
REFERENCE: Neel, P.L., "Weed Control in Containers With Herbicide-Impregnated Mulch Materials," Proc. Fla. State Hort. Soc. 85:409-413 (1973).

<5297>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Crabgrass (DIGITARIA ISCHAEMUM); Bluegrass, Kentucky (POA PRATENSIS); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 11.2 kg/ha
APPLICATION METHODS: Preemergence spray (40 psi and 50 gal/A) and granule broadcast
EXPERIMENTAL CONDITIONS: Field study; soil--Hagerstown silt loam; evaluation time--up to 5 mo

<5297>
<5297> CONT.
EFFECTS: Effective crabgrass control with very slight or no injury to turfgrasses
COMMENTS: Best control of crabgrass in both turf species obtained by DCPA, butralin, AC-92390, and prosulfalin; all rates of granular HOE-22870 provided good crabgrass control in red fescue; in bluegrass, HOE-22870 controlled crabgrass only at the high rate or when the low rate was reapplied
REFERENCE: Watschke, T.L., D.J. Wehner, and J.M. Duich, "Pre- and Postemergence Crabgrass Control in Turf," Proc. NE Weed Sci. Soc. 30:358-366 (1976).

<5298>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DAC-893
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bluegrass, annual (POA ANNUA); Fescue, creeping red (FESTUCA RUBRA); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 4.0 lb/A
APPLICATION METHODS: Applied to soil surface as preemergence spray; 35 to 40 psi
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; herbicides applied and seed planted at monthly intervals to determine residual effect; time period--1958 and 1959
EFFECTS: Reduced germination of all turfgrasses in either June or July application or both
COMMENTS: In pre-emergence crabgrass control study in turf, no significant differences found between calcium arsenate and arsenic complex + 7% nitrogen with respect to time of application; these herbicides effectively controlled crabgrass; however, arsenic complex + 7% nitrogen injured turf; fenac formulations did not satisfactorily control crabgrass and severely injured turf; chlordane most effective when applied in the spring but did not satisfactorily control crabgrass
REFERENCE: Juska, F.V., "Pre-emergence Herbicides for Crabgrass Control and Their Effects on Germination of Turfgrass Species," Weeds 9(1):137-144 (1961).

<5299>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 8.9 kg/ha
APPLICATION METHODS: Preemergence spray applied at varied intervals after planting 0, 2, 4, and 8 days)
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Leeper silty clay loam; pot culture
EFFECTS: Moderate pigweed control at 0 and 2 days after planting with no adverse effect on cucumber at those application times
COMMENTS: For 3 weeks after planting, chloramben methyl ester gave complete weed control al all dates of application; DCPA and naptalam gave better weed control when applied at 0 and 2 days; diphenamid gave better control when applied at 0, 2, and 4 days following planting; cucumber survival reduced with application of all herbicides except naptalam at 4 days after planting
REFERENCE: Cole, A.W. and V.L. Etheridge, "Redroot Pigweed and Cucumber Response to Application Time of Herbicides," Advanc. Frontiers Plant Sci. 30:17-24 (1975).

<5300>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants; Pepper, pimento
EXPERIMENTAL DOSE: 6.0 and 8.0 lb/A
APPLICATION METHODS: Preemergence (tomatoes) and layby (pepper)
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam; time period--1960 and 1961
EFFECTS: Effective weed control with no adverse effect on tomato and pimento
COMMENTS: Most promising of herbicides tested were PEBC incorporated in soil, and diphenamid; PEBC and diphenamid approved for use on both tomatoes and peppers
REFERENCE: Amling, H.J., W.A. Johnson, and M.H. Hollingsworth, "Chemicals Control Weeds in Tomatoes and Pimento Pepper," Highlights Agri. Res. 10(1):5 (1963).

<5301>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: Chlorthal-dimethyl
PLANT: Pepper, hot (CAPSICUM ANNUUM); Santa Maria (PARTHENIUM HYSTEROPHORUS); Nutsedge, purple (CYPERUS ROTUNDUS); (CLEOME CILIATA); (BOERHAVIA DIFFUSA); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); Pinkroot (SPIGELIA ANTHELMIA); Junglerice (ECHINOCHLOA COLONUM); Wiregrass (ELEUSINE INDICA); Sandbur (CENCHRUS ECHINATUS)
EXPERIMENTAL DOSE: 8 kg/ha
APPLICATION METHODS: Preemergence treatment
EXPERIMENTAL CONDITIONS: Seed bed trial; application 3 days before sowing
EFFECTS: Pepper seedling emergence and growth equal to hand-weeded plots; weed control barely satisfactory
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<5302>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: Dacthal
PLANT: Crabgrass (DIGITARIA sp.); Bentgrass (AGROSTIS sp.); Bluegrass, Kentucky (POA PRATENSIS); Fescue (FESTUCA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Clover, white (TRIFOLIUM REPENS)
EXPERIMENTAL DOSE: 10.0 lb/A
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective crabgrass control with little or no adverse effect on turfgrasses or clover; seed germination severely reduced

<5302> CONT.
COMMENTS: Where applied to greenhouse flats immediately after seeding rows of turfgrasses and crabgrasses, chemicals allowed turfgrass seeds to sprout and grow normally while crabgrass died within few day after sprouting
REFERENCE: Gallagher, J.E. and R.J. Otten, "New Organic Arsenical Materials for Pre-Emergence Crabgrass Control," Hormolog. 3(1):11-13 (1961).

<5303>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Onion (ALLIUM CEPA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Panicum, fall (PANICUM DICHOTOMIFLORUM); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 7.0 and 10.5 lb/A
APPLICATION METHODS: Preemergence and postemergence
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam
EFFECTS: Severe stunting and yield reduction of onion with moderate to effective weed control
COMMENTS: Only oxidiazon applied as postemergence treatment on two-leaf and four-leaf onions resulted in yields comparable to the hand weeded check; injury to two-leaf onions was serious with lowest rates of oxidiazon, methazole, and phenmedipham;
REFERENCE: Grande, J.A., "Pre-Post Herbicide Combination Studies in Direct Seeded Onions," Proc. N.E. Weed Sci. Soc. 30:185-189 (1976).

<5304>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Speedwell, creeping (VERONICA FILIFORMIS); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 12.0 lb/A
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate weed control at 12.0 lb/A with slight to moderate damage of turfgrass
COMMENTS: Non-selective control achieved with glyphosate; selective control achieved with DCPA and RO7-6145; Ronstar not effective in controlling VERONICA FILIFORMIS
REFERENCE: Kaufmann, J.E., "Chemical Control of VERONICA FILIFORMIS in Turf," Proc. N.E. Weed Sci. Soc. 30:340-343 (1976).

<5305>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: Dacthal
PLANT: Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 10.0 and 15.0 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Flat culture
EFFECTS: Reduced numbers or growth of rhizomes and tillers
COMMENTS: Kentucky bluegrass plants showed reduction of rhizome number and length and number of tillers; zytron, dacthal, and trifluralin produced greatest reduction; bandane and chlordane reduced rhizome development; crab-e-rad reduced number of tillers and length of rhizomes
REFERENCE: Gaskin, T.A., "Effect of Pre-Emergence Crabgrass Herbicides on Rhizome Development in Kentucky Bluegrass," J. Agron. 56(1):340-342 (1964).

<5306>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Bluegrass, annual (POA ANNUA); Bluegrass, Kentucky (POA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Fescue, creeping red (FESTUCA RUBRA); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 5.0, 10.0, and 20.0 lb/A; 50% WP
APPLICATION METHODS: Preemergence spray (field); 35 psi; for soluble or wettable materials; sand carrier for remaining materials; applied annually for 3 years; addition to soil (greenhouse)
EXPERIMENTAL CONDITIONS: Field study; bluegrass turf killed with methyl bromide and plots seeded 3 days afterwards with various turf grasses; time period--1960 to 1962; greenhouse study--studied seedling emergence (germination) up to 93 days in flat culture
EFFECTS: At 10 lb/A rate, reduced stand of common bluegrass but no adverse effect on other grasses after 3 applications; reduced germination of all grasses up to 93 days after herbicide application (greenhouse)
COMMENTS: With few exceptions, herbicides retarded stand and vigor of turfgrasses seeded in turf killed with methyl bromide; chlordane was least and commercial arsenic complex plus 7% N most toxic to young seedlings; seedlings of Merion Kentucky bluegrass most resistent to herbicide injury; no appreciable decrease in original turf density noted except for arsenic complex material which severely injured bluegrass turf
REFERENCE: Juska, F.V. and A.A. Hanson, "Effect of Preemergence Crabgrass Herbicides on Seedling Emergence of Turfgrass Species," Weeds 12(2):97-101 (1964).

<5307>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Purslane, common (PORTULACA OLERACEA); Crabgrass, hairy (DIGITARIA SANGUINALIS); Cabbage (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preemergence; postemergence, and preplant incorporated sprays; 18 gal/A at 30 lb/sq in.
EXPERIMENTAL CONDITIONS: Field study; soil--Haven loam
EFFECTS: Preplant incorporated--moderate weed control with no adverse effect on cabbage

<5307>
<5307> CONT.
COMMENTS: None of the herbicides used unacceptably phytotoxic, but alachlor resulted in slight temporary stunting; alachlor most effective herbicide on total weed spectrum and HOE 23408 most effective for control of annual grasses
REFERENCE: Selleck, G.W. and W.J. Sanok, "Herbicide Trial for Direct Seeded Fall Cabbage on Long Island," Proc. NE Weed Sci. Soc. 30:197-199 (1976).

<5308>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: Chlorthal-methyl
PLANT: Speedwell, creeping (VERONICA FILIFORMIS)
EXPERIMENTAL DOSE: 6.0 to 18.7 kg/ha; WP and G
APPLICATION METHODS: Postemergence spray; 400 l./ha or more
EXPERIMENTAL CONDITIONS: Field study; 6 locations in U.S., Holland, and Ireland
EFFECTS: Effective speedwell control
COMMENTS: Creeping speedwell effectively controlled with postemergence applications of chlorthal-methyl in turf areas; activity slow; usually 30 days required before symptoms of phytotoxicity appeared; some 85 to 90 percent control consistently obtained; granular applications of chlorthal-methyl markedly less effective than spray applications
REFERENCE: Schauer, R.L., "Postemergence Control of Creeping Speedwell With Chlorthal-Methyl," Proc. 11th. Br. Weed Cont. Conf. 3:1112-1116 (1972).

<5309>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Crabgrass (DIGITARIA sp.); Bluegrass, Kentucky (POA PRATENSIS); Goosegrass (ELEUSINE INDICA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 12.0 lb/A; G
APPLICATION METHODS: Preemergence broadcast spreader (G) and spray (WP); 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; established turf with seeding of crabgrass prior to herbicide applications
EFFECTS: Moderate control of crabgrass and slight control of goosegrass with no effect on turf grasses
COMMENTS: A-820, CGA-10832, and RP-17623 experimental herbicides useful new preemergence herbicides in comparison with commercially available herbicides; two new aniline herbicides have some advantages
REFERENCE: Engel, R.E., C.W. Bussey, and R.D. Ilnicki, "Control of Crabgrass DIGITARIA Species and Goosegrass ELEUSINE INDICA in Turf with Experimental Preemergence Herbicides," Proc. Northeast. Weed Soc. 27:324-330 (1973).

<5310>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Grasses; Broadleaf weeds; Bermudagrass (CYNODON sp.)
EXPERIMENTAL DOSE: 11.2 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l./ha
EXPERIMENTAL CONDITIONS: Field study; soils--Cecil clay loam and Cecil sandy loam; turfgrasses sprig-planted; irrigation as needed; applications made 15 to 17 wk after sprigging; evaluation time--up to 24 wk; biweekly addition of nitrogen (ammonium nitrate)
EFFECTS: Effective control of grass weeds and very slight control of broad leafs with early growth retardation of bermudagrass
COMMENTS: Retarded early growth of Tifway bermudagrass; plants had overcome this growth retardation by 11 weeks following sprigging; postemergence treatments of MSMA + 2,4-D were nonphytotoxic to the turfgrass
REFERENCE: Johnson, B.J., "Herbicides, Sprigging Rates, and Nitrogen Treatments for Establishment of Tifway Bermudagrass," Agron. J. 65(1):969-972 (1973).

<5311>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: Dacthal
PLANT: (LEUCAENA LEUCOCEPHALA)
EXPERIMENTAL DOSE: 4.2, 8.4, and 12.6 kg/ha
APPLICATION METHODS: Soil addition; postemergence spray (charcoal study)
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Moderate to severe injury and stunting at highest concentrations
COMMENTS: DCPA applied at pre-emergent rates reduced leucaena yield, plant height and root length; highest rate, yield only 2 per cent of control yields; severe tap root damage noted; trifluralin as a pre-emergent spray controlled crowsfoot at all rates but resulted in linear reduction in leucaena yield with increasing herbicide rate
REFERENCE: Jones, R.J. and A.S. Aliynt, "The Effect of ELEUSINE INDICA, Herbicides on the Seedling Growth of LEUCAENA LEUCOCEPHALA cv. Peru," Trop. Grassl. 10(3):195-203 (1976).

<5312>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Broadleaf weeds; Grasses; Carrot (DAUCUS CAROTA)
EXPERIMENTAL DOSE: 11.5 and 20.0 kg/ha
APPLICATION METHODS: Preplant incorporated (7 cm depth); preemergence and postemergence sprays; 308 l./ha; combined treatments
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and sandy clay; evaluation period--1975 and 1976
EFFECTS: In preemergence, moderate control of weeds with slight phytotoxicity but little or no adverse effect on yield of carrot

<5312> CONT.
COMMENTS: Combination treatment consisting of trifluralin preplant incorporated followed by a postemergence application of linuron provided season long weed control; carrots tolerated postemergence applications of Hoe 23408 which selectively controlled annual grass weeds; combination of Hoe 23408 plus linuron resulted in more rapid weed kill than with either material alone
REFERENCE: Henne, R.C., "Chemical Weed Control in Carrots," Proc. Northeast Weed Sci. Soc. 31:238-243 (1977).

<5313>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, dimethyl ester
CHEMICAL COMMON NAME: DCPA
PLANT: Centipede grass (EREMOCHLOA OPHIUROIDES); Bermudagrass, Tifton (CYNODON sp.); Bermudagrass (CYNODON sp.); Zoysiagrass (ZOYSIA JAPONICAA); Grasses; Broadleaf weeds
EXPERIMENTAL DOSE: 11.2 kg/ha
APPLICATION METHODS: Preemergence spray; 376 l./ha except benefin which was mixed with sand and applied by hand
EXPERIMENTAL CONDITIONS: Field study; soil--Cecil sandy clay loam; turfgrass sprig-planted; herbicides applied 2 to 3 days after planting; time period--1972 to 1974; evaluation time--16.5 mo
EFFECTS: Slight adverse effect on turfgrasses with initial moderate control of grassy weeds and slight control of broadleafs
COMMENTS: Bensulide only herbicide that satisfactorily controlled grassy weeds during first growing season both years; turfgrass generally grew as well or better in untreated than treated plots
REFERENCE: Johnson, B.J., "Minimal Herbicide Treatments on the Establishment of Four Turfgrasses,," Agron. J. 67(1):786-789 (1975).

<5314>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro-, disodium salt
CHEMICAL COMMON NAME: Sodium DCPA
PLANT: Pine, Scots (PINUS SYLVESTRIS); Spruce, sitka (PICEA SITCHENSIS); Larch, Japanese (LARIX sp.)
EXPERIMENTAL DOSE: 0.1, 0.2 and 0.4%
APPLICATION METHODS: Treatment when most seedlings in young true leaf stage; spray at 100 gpa
EXPERIMENTAL CONDITIONS: Pot studies; spraying performed in greenhouse but pots placed outside for test; watering when necessary; acute and chronic toxicity assessed; weed control not studied
EFFECTS: 61, 19, and 47% kill of pine (after 2 months), spruce (after 15 days), and larch (after 1 month), respectively at 0.4%; greater percentage kill of pine and larch at 0.1% than at 0.4%
COMMENTS: Laboratory results on effect on germination of several pine species also reported
REFERENCE: Srivastava, T.N., "The Applications of Selective Herbicides to Forestry Practice," Indian For. 77:176-191 (1951).

<5315>
CHEMICAL NAME: 1,4-Benzenedicarboxylic acid, 2,3,5,6-tetrachloro, dimethyl ester
CHEMICAL COMMON NAME: Chlorthal
PLANT: Junglerice (ECHINOCHLOA COLONUM); Foxtail (SETARIA sp.); Sandbur (CENCHRUS sp.); Thistle, Russian (SALSOLA KALI); Cocklebur (XANTHIUM sp.); Dandelion (TARAXACUM sp.); Goathead (TRIBULUS TERRESTRIS); Sunflower (HELIANTHUS sp.); Horsenettle (SOLANUM ELAEAGNIFOLIUM); Pepper, Chile
EXPERIMENTAL DOSE: 4.0, 6.0, and 10.5 lb/A
APPLICATION METHODS: Preplanting incorporated and preemergence treatments; sprays of 90 gal water applied at 25 psi
EXPERIMENTAL CONDITIONS: Plot, one 30-ft row; 3-year experiments; randomized block design with 3 replications the first year and 5 replications the second and third years; weed counts made one month after planting; irrigation and hoeing as needed
EFFECTS: Preemergence--21, 29, and 80% weed reduction and 117, 117, and 92% pepper yield at 4.0, 6.0, and 10.5 lb/A, respectively; preplanting--25, 8 and 19% weed reduction and 100, 109, and 46% pepper yield at respective concentrations
COMMENTS: Untreated check hoed to control weeds--pepper yield recorded as 100%
REFERENCE: Trujillo, P.M. and J.W. Whitworth, "Weed Control in Chile Peppers at the Espanola Valley Branch Station," New Mexico State Univ. Agric. Exper. Station Res. Rep. 213:1-4 (1971).

<5316>
CHEMICAL NAME: 1,4-Butanediamine, N,N'-bis(3-aminopropyl)-, phosphate
CHEMICAL COMMON NAME: Sperminphosphate
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<5317>
CHEMICAL NAME: 1,4-Naphthalenedione, 5-hydroxy-
CHEMICAL COMMON NAME: Juglone
PLANT: Bean, kidney (PHASEOLUS VULGARIS); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 5.0 X 10 (-7), 2.5 X 10 (-6), 1.0 X 10 (-5), 2.5 X 10 (-5), 5.0 X 10 (-5), 7.3 X 10 (-5), 1 X 10 (-4), and 3.0 X 10 (-4) M
APPLICATION METHODS: Leaf disk treatment
EXPERIMENTAL CONDITIONS: Rate of respiration determined using a warburg respirometer; seedlings grown in greenhouse, 3.5 mm diameter leaf discs taken when seedlings 10 to 20 cm tall; oxygen uptake measured in dark

<5317>
<5317> CONT.
EFFECTS: Very little or no inhibition of oxygen uptake at 5 X 10 (-7) to 1 X 10 (-5) M; 50% inhibition of respiration at 1 X 10 (-4) M; both plants behaved similarly
COMMENTS: Juglone present in green leaves, green hulls, and inner root bark of black walnut
REFERENCE: Perry, S.F., "Inhibition of Respiration by Juglone in PHASEOLUS and LYCOPERSICON," Bull. Torrey Bot. Club 94(1):26-30 (1967)

<5318>
CHEMICAL NAME: 1,4-Napthalenedione, 2,3-dichloro-
CHEMICAL COMMON NAME: Phygon
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: Not given
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: No adverse effect
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<5319>
CHEMICAL NAME: 1,4-Napthalenedione, 2,3-dichloro-
CHEMICAL COMMON NAME: Dichlone
PLANT: Apple (PYRUS MALUS)
EXPERIMENTAL DOSE: 0.227 and 0.113 kg/100 gal water
APPLICATION METHODS: Pre-cover (0.227) and cover (0.113) sprays
EXPERIMENTAL CONDITIONS: Randomized block design; 6 trees per plot; 8 to 10 sprays each year; pre-cover dichlone and cover captan for one test and pre-cover captan and cover dichlone for another test approximately equal number of pre-cover and cover sprays; 5 year study
EFFECTS: Some fruit russeting from pre-cover dichlone sprays; no significant differences in yield, trunk cross-sectional area, amount of bloom, fruit size, or fruit color
REFERENCE: Ross, R.G., A.D. Crowe, and R.P. Longley, "Performance of McIntosh Apple Trees Sprayed with Captan, Dodine, or Pre-cover and Cover Sprays of Dichlone," Can. J. Plant Sci. 49:655-658 (1969).

<5320>
CHEMICAL NAME: 1,4-Oxathiin-3-carboxamide, 5,6-dihydro-2-methyl-N-phenyl-
CHEMICAL COMMON NAME: Carboxin
PLANT: Barley (HORDEUM VULGARE); Bean, kidney (PHASEOLUS VULGARIS); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1 X 10(-5)M to 1 X 10(-3)M
APPLICATION METHODS: Addition to vermiculite in Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Greenhouse study; vermiculite
EFFECTS: Significant growth reduction of all test species at 1 X 10(-3) and 1 X 10(-4)M and at 1 X 10(-5)M for barley
COMMENTS: Carboxin and its oxidized products not effective in inhibiting the growth or metabolic activities of the various non-target organisms or systems until concentrations of 10(-4)M or higher reached; target species strongly inhibited at 10(-6)M
REFERENCE: Mathre, D.E., "Effects of Oxathiin Systemic Fungicides on Various Biological Systems," Bull. Envir. Contam. Toxicol. 8(5):311-316 (1972).

<5321>
CHEMICAL NAME: 1,4-Oxathiin-3-carboxamide, 5,6-dihydro-2-methyl-N-phenyl-
CHEMICAL COMMON NAME: Vitavax
PLANT: Barley (HORDEUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.2 to 0.5 kg/qt seed
APPLICATION METHODS: Applied to seed
EXPERIMENTAL CONDITIONS: Laboratory studies; evaluation time--varied; seed germination to seed production
EFFECTS: Did not stimulate growth at 0.3 kg/qt seed but did stimulate respiration and catalase activity
COMMENTS: Stimulation of respiration and in activity of catalase in young germinating plants of barley and wheat; effect of disinfection of seed during subsequent period of growth of plants manifested in a reverse way
REFERENCE: Kratka, J. and I. Ujevic, "The Effect of Seed Disinfection With Systemic Preparations Vitavax and Plantvax on Respiration Activity and on Catalase in Barley," Zentralblatt 126:154-161 (1971).

<5322>
CHEMICAL NAME: 1,4-Oxathiin-3-carboxamide, 5,6-dihydro-2-methyl-N-phenyl-, 4,4-dioxide
CHEMICAL COMMON NAME: Plantvax
PLANT: Barley (HORDEUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 0.2 to 0.5 kg/qt seed
APPLICATION METHODS: Applied to seed
EXPERIMENTAL CONDITIONS: Laboratory studies; evaluation time--varied; seed germination to seed production
EFFECTS: Stimulated growth, respiration, and catalase activity at 0.3 kg/qt seed
COMMENTS: Stimulation of respiration and in activity of catalase in young germinating plants of barley and wheat; effect of disinfection of seed during subsequent period of growth of plants manifested in a reverse way
REFERENCE: Kratka, J. and I. Ujevic, "The Effect of Seed Disinfection With Systemic Preparations Vitavax and Plantvax on Respiration Activity and on Catalase in Barley," Zentralblatt 126:154-161 (1971).

<5323>
CHEMICAL NAME: 1,4-Oxathiin-3-carboxamide, 5,6-dihydro-2-methyl-N-phenyl-, 4,4,dioxide
CHEMICAL COMMON NAME: Oxycarboxin
PLANT: Barley (HORDEUM VULGARE); Bean, kidney (PHASEOLUS VULGARIS); Soybean (GLYCINE MAX); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1 x 10(-5) M to 1 x 10(-3) M
APPLICATION METHODS: Addition to vermiculite in Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Greenhouse study; vermiculite
EFFECTS: Significant growth reduction of all test species at 1 x 10(-3) and 1 x 10(-4) M and at 1 x 10(-5) M for barley
COMMENTS: Carboxin and its oxidized products not effective in inhibiting the growth or metabolic activities of the various non-target organisms or systems until concentrations of 10(-4) M or higher reached; target species strongly inhibited at 10(-6) M
REFERENCE: Mathre, D.E., "Effects of Oxathiin Systemic Fungicides on Various Biological Systems," Bull. Envir. Contam. Toxicol. 8(5):311-316 (1972).

<5324>
CHEMICAL NAME: 1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1 alpha, 4 alpha, 4a beta, 5 alpha, 8 alpha, 8a beta)-
CHEMICAL COMMON NAME: Aldrin
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Soil (vermiculite) subsurface application by injection of 20 microliters aldrin in one ml of acetone to soil depth of one cm; C-14 ring-labeled aldrin utilized
EXPERIMENTAL CONDITIONS: Model ecosystem; environmental chamber; soil--vermiculite; standard reference water; 12 hr photoperiod; temperature--26 C (day), 19 C(night); RH--50%; light intensity--1000 ft candles; evaluation time--20 days; prairie vole, saltmarsh caterpiller, earthworm, garden slug, and pillbug included as part of experiment
EFFECTS: Reduced plant growth, 9.5% reduction at 1.12 kg/ha application and 14.3% reduction at 2.24 kg/ha; accumulation of aldrin occurred mainly in corn roots but also significantly in shoots
COMMENTS: All invertebrates died shortly after aldrin application; vole after only 5 days exposure accummulated more aldrin than corn after 20 days; translocation and accumulation of aldrin in corn roots and shoots more than expected
REFERENCE: Cole, L.K., J.R. Sanborn, and R.L. Metcalf, "Inhibition of Corn Growth by Aldrin and the Insecticide's Fate in the Soil, Air, Crop, and Wildlife of a Terrestrial Model Ecosystem," Environ. Entomol. 5(3):583-589 (1976).

<5325>
CHEMICAL NAME: 1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1 alpha, 4 alpha, 4a beta, 5 alpha, 8 alpha, 8a beta)-
CHEMICAL COMMON NAME: Aldrin
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.25, and 2.0 oz/bushel of seed
APPLICATION METHODS: Seed treatment; WP formulations of all doses, EC formulation of 1.0 oz/bushel dose; recrystallized aldrin used in experiment 2
EXPERIMENTAL CONDITIONS: Experiment 1--field study, slurry treatments of seed, 18-ft row plots containing 100 seeds, 8 replications, 1.25-oz rate tested, 19-month old seeds; experiment 2--field study, 20-ft rows wit 100 seeds/row, 4 replications, randomized complete block design, highly vivable seeds, all rates except 1.25 oz tested
EFFECTS: Experiment 1--significant decrease in number of emerged plants and significant increase in mean emergence period; Experiment 2--no appreciable injury except at 2-oz rate where germination injury was recorded as slight
COMMENTS: Older experiment 1 seeds apparently less resistant
REFERENCE: Starks, K.J. and J.H. Lilly, "Insecticide Seed Treatment of Soybeans in Relation to Phytotoxicity and Seed-Corn Maggot Control," J. Econ. Entomol. 48(5):538-543 (1955).

<5326>
CHEMICAL NAME: 1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1 alpha, 4 alpha, 4a beta, 5 alpha, 8 alpha, 8a beta)-
CHEMICAL COMMON NAME: Aldrin
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.8 lb/A
APPLICATION METHODS: Postemergence spray for insect control; 10 gal/A; 3X applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted
COMMENTS: Spray injury generally more severe with accumulative applications; most severe with oil soluble formulation of DDT for all dates and accumulative applications, and for dilan and BHC with single applications
REFERENCE: Probst, A. H. and R. T. Everly, "Effect of Foliage Insecticides on Growth, Yield and Chemical Composition of Soybeans," Agron. J. 49:577-581 (1957).

<5327>
CHEMICAL NAME: 1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1 alpha, 4 alpha, 4a beta, 5 alpha, 8 alpha, 8a beta)-
CHEMICAL COMMON NAME: Aldrin
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 4.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Slight leaf damage with no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9

<5327>
<5327> CONT.
organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<5328>
CHEMICAL NAME: 1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1 alpha, 4 alpha, 4a beta, 5 alpha, 8 alpha, 8a beta)-
CHEMICAL COMMON NAME: Aldrin
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 12.5, 50.0, and 100.0 ppm
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Arredondo loamy fine sand; pot culture
EFFECTS: No adverse effect on germination but reduced root or shoot growth at high rates
COMMENTS: BHC decreased germination; all other insecticides increased germination or had no effect; root and top weights decreased by chlordane, lindane, aldrin, dieldrin, TDE, DDT and BHC; top weights reduced by methoxychlor; heptachlor and toxaphene had no effect on growth
REFERENCE: Eno, C.F. and P.H. Everett, "Effects of Soil Applications of 10 Chlorinated Hydrocarbon Insecticides on Soil Microorganisms and the Growth of Stringless Black Valentine Beans," Soil Sci. Soc. Am. Proc. 22:235-238 (1958).

<5329>
CHEMICAL NAME: 1H-Azepine-1-carbothioic acid, hexahydro-, S-ethyl ester
CHEMICAL COMMON NAME: R-4572
PLANT: Beet (BETA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Kochia (KOCHIA SCOPARIA); Broadleaf weeds; Foxtail (SETARIA sp.)
EXPERIMENTAL DOSE: 4 to 16 lb/A
APPLICATION METHODS: Preplanting incorporated spray at 40 psi and 14.3 gpa
EXPERIMENTAL CONDITIONS: Spring and summer tests; sandy and clay loam soils; some weed seedlings made; irrigation when necessary; broadleaf weeds dominant over grass weeds
EFFECTS: Spring--21% beet stunting and 92% beet stand, 79, 51, 65, and 73% pigweed, kochia, broadleaves, and foxtail control, respectively; summer--18% beet stunting and 92% beet stand, 47 and 87% pigweed and foxtail control, respectively
COMMENTS: Comparisons with control; broadleaves refers to broadleaves other than pigweed and kochia
REFERENCE: Sullivan, E.F., R.R. Wood, R.L. Abrams, and S.G. Walter, "Preplant Weed Control on Sugar Beets," Am. Soc. Sugar Beet Technol. 13(5):389-396 (1965).

<5330>
CHEMICAL NAME: 1H-Azepine, 1-[(ethylsulfinyl)carbonyl]hexahydro-
CHEMICAL COMMON NAME: Molinate sulfoxide
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Mustard, Chinese (BRASSICA JUNCEA); Dock, curly (RUMEX CRISPUS); Oat (AVENA SATIVA); Crabgrass, large (DIGITARIA SANGUINALIS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Barley (HORDEUM VULGARE); Foxtail, giant (SETARIA FABERI); Corn (ZEA MAYS); Beet, sugar (BETA VULGARIS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 0.5 and 3.4 kg/ha
APPLICATION METHODS: Preplanting incorporated treatments; broadleaves at 0.5 kg/ha--A. RETROFLEXUS, B. JUNCEA, and R. CRISPUS; grasses at 0.5 kg/ha--A. SATIVA, D. SANGUINALIS, E. CRUSGALLI, H. VULGARE, and S. FABERI
EXPERIMENTAL CONDITIONS: Loamy sand soil; greenhouse tests; thiocarbamates and their sulfoxide derivatives tested
EFFECTS: 33 and 63% broadleaf and grass control, respectively; 0, 70, and 20% corn, sugarbeet and rice injury, respectively at 3.4 kg/ha
COMMENTS: Broadleaf and grass control better than parent compound; corn and rice injury less than from parent but sugarbeet injury greater; weeds tabulated as broadleaves and grasses
REFERENCE: Casida, J.E., E.C. Kimmel, M. Lay, H. Ohkawa, J.E. Rodebush, R.A. Gray, C.K. Tseng, and H. Tilles, "Thocarbamate Sulfoxide Herbicides," Pesticides 3:675-679 (1974).

<5331>
CHEMICAL NAME: 1H-Indole, 3-ethyl-
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<5332>
CHEMICAL NAME: 10-Undecenal
CHEMICAL COMMON NAME: N-undecylenic aldehyde
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 3.2%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings

<5332> CONT.
without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<5333>
CHEMICAL NAME: 16,28-Secosolanid-22(28)-ene-3,16-diol, (3 beta, 5 alpha, 16 alpha, 25 beta)-
CHEMICAL COMMON NAME: Solafloridine
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Reduced growth of wheat with undefined effects in pea test
COMMENTS: Of 524 compounds examined, 71 were found highly active and a further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<5334>
CHEMICAL NAME: 16,28-Secosolanidan-23-o1, 3-amino-16,23-epoxy-, (3 beta, 5 alpha, 16 alpha, 22 alpha, 23 beta, 25 beta)-
CHEMICAL COMMON NAME: Solanocapsine
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Reduced growth of wheat with undefined effects in pea test
COMMENTS: Of 524 compounds examined, 71 were found highly active and a further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<5335>
CHEMICAL NAME: 16,28-Secosolanidan-23-o1, 3-deamino-16,23-epoxy-3-beta-hydroxy-, (3 beta, 5 alpha, 16 alpha, 22 alpha, 23 beta, 25 beta)-
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Reduced growth of wheat with undefined effects in pea test
COMMENTS: Of 524 compounds examined, 71 were found highly active and a further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<5336>
CHEMICAL NAME: 19-Norkaur-16-en-18-oic acid, 15-hydroxy-2-[[2-0-(3-methyl-1-oxobutyl)-3,4-di-0-sulfo-alpha-D-glucopyranosyl]o xy]-dipotassium salt, (2 beta, 4 alpha, 15 alpha)-
CHEMICAL COMMON NAME: Atractyloside
PLANT: Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 1 X 10(-5) to 1 X 10(-3) M
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated cauliflower mitochondria
EFFECTS: Inhibited enzyme activity, mitochondrial shrinkage, and respiration
COMMENTS: Atratyloside completely inhibited 2,4-dinitrophenol-stimulated ATPase activity of respiratory-primed cauliflower mitochondria, but had no effect on sonicated preparations or on endogenous activity associated with intact mitochondria; atractyloside also blocked shrinkage and State 3 respiration initiated by ADP in intact mitochondria
REFERENCE: Jung, D.W. and J.B. Hanson, "Atractyloside Inhibition of Adenine Nucleotide Transport Mitochondria From Plants," Biochem. Biophys. Acta. 325(B23):189-192 (1973).

<5337>
<5337>
CHEMICAL NAME: 2-Anthracenesulfonic acid, 1,4-diamino-9,10-dihydro-9,10-dioxo-, 5 chloro-2-methylphenyl ester
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: No effect on charlock or oat germination
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<5338>
CHEMICAL NAME: 2-Benzofurancarboxylic acid
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Moderate damage of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<5339>
CHEMICAL NAME: 2-Benzopyran-1-one, 3,4,4a,5,6,7-hexahydro-8-hydroxy-3-methyl-1H-, trans-(+)-
CHEMICAL COMMON NAME: Ramulosin
PLANT: Bean, pinto (PHASEOLUS VULGARIS); Soybean (GLYCINE MAX); Corn (ZEA MAYS); Clover (TRIFOLIUM sp.); Grasses; Morningglory (IPOMOEA sp.); Oat (AVENA SATIVA); Sorghum (SORGHUM BICOLOR); Tomato (LYCOPERSICON ESCULENTUM); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1.0 to 1000 ppm; 1.0% Tween 80
APPLICATION METHODS: Solution soak of seed
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination
EFFECTS: Inhibited germination of most seeds at 100 or 1000 ppm
COMMENTS: Inhibited germination of wheat, oats, tomato, grass, corn, clover, sorghum, and morningglory seeds; appreciable activity noted with pinto and soy beans
REFERENCE: Hendershot, W.F., C.W. Hesseltine, T.G. Pridham, R.G. Benedict, and R.W. Jackson, "Ramulosin: Inhibitory Effect Against Plant Seeds and Various Fungi," Archives Biochem. & Biophy. 96:166-170 (1962).

<5340>
CHEMICAL NAME: 2-Benzopyran-7-carboxylic acid, 4,6-dihydro-8-hydroxy-3,4,5-trimethyl-6-oxo-3H-, (3R-trans)-
CHEMICAL COMMON NAME: Citrinin
PLANT: Bean, hyacinth (DOLICHOS LAB LAB); Bean, black Valentine (PHASEOLUS VULGARIS); Bean, mung (PHASEOLUS AUREUS); Cotton (GOSSYPIUM HIRSUTUM); Cotton (GOSSIPIUM ARBOREUM); Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 10(-5) to 10(-3)M
APPLICATION METHODS: Solutions contained in tubes in which intact plants were placed after removal of plants from soil
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: At 10(-3)M, varying effects from chlorosis to necrosis of leaves
COMMENTS: Positive indication that citrinin is a phytotoxin
REFERENCE: Damodaran, C., S. Kathirvel-Pandian, S. Seeni, R. Selvam, M.G. Ganesan, and S. Shanmugasundaram, "Citrinin, a Phytotoxin?," Experientia 15(12):1415-1417 (1975).

<5341>
CHEMICAL NAME: 2-Buten-1-ol, 2-methyl-4-(1H-purin-6-ylamino)-, (E)-
CHEMICAL COMMON NAME: Zeatin
PLANT: Bladderwort (UTRICULARIA NIFLEXA)
EXPERIMENTAL DOSE: 1.0 mg/l.
APPLICATION METHODS: Addition to nutrient solution
EXPERIMENTAL CONDITIONS: Laboratory study; IN VITRO culture of shoot tips of U. INFLEXA in glass tubes or flasks containing White's nutrient medium; incubation temperature--28 C; photoperiod--18 hr; evaluation time--up to 10 wk
EFFECTS: Reduced growth and flowering under short-day conditions and increased growth with no flowering under long-day conditions
COMMENTS: MEPA showed strong herbicidal effect and killed plants; AMO-1618 and coumarin inhibited apical as well as lateral bud growth; These three compouds and ABA, kinetin, BA, and zeatin unable to promote flowering under non-inductive conditions; BA stimulated growth in both long and short days; even in the latter conditions AMO-1618 and coumarin totally inhibited flowering, whereas ABA, kinetin and BA permitted 80-100 per cent of the cultures to flower; zeatin lowered the percentage of flowering cultures
REFERENCE: Ram, H.Y.M., H. Harada, and J.P. Nitsch, "Studies on Growth and Flowering in Axenic Cultures of Insectivorous Plants. III. Effects of Photoperiod, Ethrel, Morphactin and a Few Other Growth Substances and Metabolic Inhibitors on UTRICULARIA INFLEXA," Z. Pflanzenphysiol. Bd. 68(5):235-253 (1972).

<5342>
CHEMICAL NAME: 2-Butene-1,4-diol
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.3 mM
APPLICATION METHODS: Plants grown in solution containing chemical being tested
EXPERIMENTAL CONDITIONS: After germination in petri dishes, seedlings transplanted to reagent tube containing 6 g vermiculite and 25 ml Hoagland solution 2 that included 0.3 mM of chemical being tested; plants grown in growth chamber--16 hr photoperiod, 25 C day temperature and 12 C night temperature
EFFECTS: Minor toxicity
COMMENTS: General toxic effects reported for all chemicals studied--growth retardation, tip burn followed by leaf scorch and death
REFERENCE: Chen, S-C. and R.M. Elofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<5343>
CHEMICAL NAME: 2-Butene, 2-methyl-
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.3 mM
APPLICATION METHODS: Plants grown in solution containing chemical being tested
EXPERIMENTAL CONDITIONS: After germination in petri dishes, seedlings transplanted to reagent tube containing 6 g vermiculite and 25 ml Hoagland solution 2 that included 0.3 mM of chemical being tested; plants grown in growth chamber--16 hr photoperiod, 25 C day temperature and 12 C night temperature
EFFECTS: Moderately toxic
COMMENTS: General toxic effects reported for all chemicals studied--growth retardation, tip burn followed by leaf scorch and death
REFERENCE: Chen, S-C. and R.M. Elofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<5344>
CHEMICAL NAME: 2-Butenedioic acid (E)-
CHEMICAL COMMON NAME: Fumaric acid
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 1X10(-5) to 1X10(-3)M
APPLICATION METHODS: Seed germination; addition to soil
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--30 to 34 C; evaluation time--5 da; greenhouse study; pot culture
EFFECTS: Stimulated growth of radicle and plumule at all concentrations and of seedlings at lowest concentrations; inhibited seedling growth at 1X10(-3.5)M; no adverse effect on germination percentage
COMMENTS: Lower concentrations of vanillic, salicylic, p-hydroxybenzoic, p-coumaric, protoratechuic, and fumaric acids stimulatory to development of radicals and plumules of paddy seeds; increasing levels of acids decreased favourable effect, except that of fumaric acid; root and shoot growth of paddy seedlings retarded even at lower concentrations, and higher levels appreciably detrimental
REFERENCE: Gaur, A.C. and R.P. Pareek, "A Study on the Effect of Certain Phenolic Acids and Fumaric Acid in Soil on the Development of Paddy Seedlings and Nitrogen-Fixing Bacteria," Zbl. Bakt. Abt. II. 131:148-156 (1976).

<5345>
CHEMICAL NAME: 2-Butenedioic acid (E)-
CHEMICAL COMMON NAME: Fumaric acid
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 3x10(-3)M
APPLICATION METHODS: Submersion of oat coleoptiles
EXPERIMENTAL CONDITIONS: Laboratory study; oat coleoptile assay--increased or inhibited growth of 3 mm sections in solutions containing sucrose, IAA, and experimental compounds; coleoptile age--66-69 hr (and at other times)
EFFECTS: Growth stimulation
COMMENTS: Most organic acids accelerated growth in absence of inhibitor but in presence of auxin and sucrose or auxin alone, inhibition of growth by low concentrations of iodoacetate and reversal of inhibition by certain organic acids; sensitivity of sections both to inhibitor and to growth promoting effect of the acids varied with age of the plants; lowest concentration causing definite inhibition steadily decreased with increasing age
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. I. The Action of Iodoacetate and Organic Acids on the AVENA Coleoptile," Am. J. Bot. 35:271-281 (1948).

<5346>
CHEMICAL NAME: 2-Butenedioic acid (Z)-
CHEMICAL COMMON NAME: Maleic acid
PLANT: Oat (AVENA SATIVA)
EXPERIMENTAL DOSE: 3 x10 (-3)m
APPLICATION METHODS: Submersion of oat coleoptiles
EXPERIMENTAL CONDITIONS: Laboratory study; oat coleoptile assay--increased or inhibited growth of 3mm sections in solutions containing sucrose, IAA, and experimental compounds; coleoptile age--66-69 hr (and at other times)
EFFECTS: No inhibition or stimulation of growth
COMMENTS: Most organic acids accelerated growth in absence of inhibitor but in presence of auxin and sucrose or auxin alone, inhibition of growth by low concentrations of iodoacetate and reversal of inhibition by certain organic acids; sensitivity of sections both to inhibitor and to growth promoting effect of the acids varied with age of the plants; lowest concentration causing definite inhibition steadily decreased with increasing age
REFERENCE: Thimann, K.V. and W.D. Bonner, "Experiments on the Growth and Inhibition of Isolated Plant Parts. I. The Action of Iodoacetate and Organic Acids on the AVENA Coleoptile," Am. J. Bot. 35:271-281 (1948).

<5347>
<5347>
CHEMICAL NAME: 2-Butenoic acid, 1-chloro-
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 3.2%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<5348>
CHEMICAL NAME: 2-Butenoic acid, 2(or 4)-isooctyl-4,6(or 2,6)-dinitrophenyl ester
CHEMICAL COMMON NAME: Karathane
PLANT: Barley (HORDEUM VULGARE); Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.025%
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; exposure of barley seed which were then placed on moistened filter paper and allowed to germinate; exposure of secondary roots of broad bean
EFFECTS: Reduced seed germination and seedling injury of barley and chromosome aberrations of barley and broad bean
COMMENTS: Sixteen fungicides reduced percentage of seed germination, induced seedling injury, and produced cytological anomalies of varying degrees in barley; more potent fungicides further tested in the secondary roots of VICIA FABA and found to produce significant amount of chromosomal aberrations in form of chromatid and isolocus breaks and exchanges of chromatid type; fungicides Dexon, Benlate, Cerasan, Copperson, Lonocol, Morestan, Hexasan, and Karathane could be classified as strong radiomimetic agents
REFERENCE: Zutshi, U. and B.L. Kaul, "Studies on the Cytogenetic Activity of Some Common Fungicides in Higher Plants," Cytobios 12:61-67 (1975).

<5349>
CHEMICAL NAME: 2-Butenoic acid, 2(or 4)-isooctyl-4,6(or 2,6)-dinitrophenyl ester
CHEMICAL COMMON NAME: Dinocap
PLANT: Apple (PYRUS MALUS)
EXPERIMENTAL DOSE: 0.05% active ingredients
APPLICATION METHODS: Trees sprayed twice pre-blossom and 3 times post-blossom
EXPERIMENTAL CONDITIONS: Four season study; Lane's Prince Albert apple variety planted in 2 rows spaced at 8 x 6 ft 2 years prior to start of study; 6 replicates; captan also applied to some trees
EFFECTS: Consistent reduction of fruit set and mature fruit compared to captan treated trees; russeting on fruit also observed with dinocap; captan plus dinocap gave fruit yield similar to captan alone
COMMENTS: Dinocap applied for apple mildew control; captan applied for scab control; concluded that captan and dinocap be applied together
REFERENCE: Kirby, A.H.M. and M. Bennett, "Phytotoxicity Trials of Certain Fungicides on Lane's Prince Albert Apple," Rep. E. Malling Res. Sta. 61:113-115 (1960).

<5350>
CHEMICAL NAME: 2-Butenoic acid, 2,3-dichloro-4-oxo-, (Z)
CHEMICAL COMMON NAME: Mucochloric acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<5351>
CHEMICAL NAME: 2-Butenoic acid, 3-[(dimethoxyphosphinyl)oxy]-, methyl ester
CHEMICAL COMMON NAME: Mevinphos
PLANT: Sarson, yellow (BRASSICA CAMPESTRIS)
EXPERIMENTAL DOSE: 0.25, 0.05, 0.1, 0.3, 0.5, 0.7, and 0.8%
APPLICATION METHODS: Seed treatments
EXPERIMENTAL CONDITIONS: Seeds soaked for 4 hours; 50 seeds germinated in Petri dishes; each treatment replicated 3 times, entire experiment replicated twice; observations every 24 hours up to 96 hours; height recorded after 96 hours
EFFECTS: Germination after 96 hours--100% at 0.025%, 90% at 0.3%, and 31.3% at 9.8%; stunting and yellowing at 0.1%, severe stunting and yellowing at 0.5%, and growth completely inhibited at 0.8%
COMMENTS: Trade name, Phosdrin
REFERENCE: Tripathi, R.L. and M.M. Hague, "Studies on Seed Treatment with Insecticides I: Effect of Certain Organophosphorus Insecticides on Germination and Growth of Seedlings of Mustard," Indian Oilseeds J. 7(2):144-147 (1963).

<5352>
CHEMICAL NAME: 2-Butenoic acid, 3-[(dimethoxyphosphinyl)oxy]-, methyl ester
CHEMICAL COMMON NAME: Mevinphos
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 0.33, 1.0, and 2.0 lb/A
APPLICATION METHODS: Spray equivalent of 15 gpa at 40 Psi; initially applied as plants began to bloom
EXPERIMENTAL CONDITIONS: Pot experiments; total of 7 applications for each of 3 groups of tests--initial treatment of 0.33 lb/A for each group followed by a second treatment of 0.33, 1.0, and 2.0 lb/A to groups 1, 2, and 3, respectively, then 5 treatments of 0.33 lb/A to each group; 6 plants per group
EFFECTS: Test group that included 2.0 lb/A treatment showed a few necrotic lesions on leaves
REFERENCE: Walker, J.K., Jr., J. Hacskaylo, and E.G. Pires, "Observations on Response of Greenhouse-Grown Cotton to Excessive Dosages of Phosphate Insecticides," J. Econ. Entomol. 57(5):782-783 (1964).

<5353>
CHEMICAL NAME: 2-Butenoic acid, 3-[(dimethoxyphosphinyl)oxy]-, methyl ester
CHEMICAL COMMON NAME: Mevinphos
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 2 lb/gal EC formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No growth reduction but severe foliar injury
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<5354>
CHEMICAL NAME: 2-Butenoic acid, 3-[(dimethoxyphosphinyl)oxyl]-, methyl ester
CHEMICAL COMMON NAME: Phosdrin
PLANT: Chrysanthemum (CHRYSANTHEMUM MORIFLORUM)
EXPERIMENTAL DOSE: 1.0 and 2.0 pt/100 gal
APPLICATION METHODS: Postemergence (postflowering) spray; 50-55 psi to run-off; sprayed 2X
EXPERIMENTAL CONDITIONS: Field (29.5 C) and laboratory (19 C); intact flowers in field and cut flowers in laboratory; spray applied directly to flowers
EFFECTS: No adverse effect on flowers
COMMENTS: Some compounds not phytotoxic after two applications under any conditions (daconil, dithane M-15, dithane Z-78, morsodren, orthocide, phosdrin and thuricide); among phytotoxic chemicals and combinations, there was a greater tendency for injury occurring at 1) high temperature than at the low, 2) fast drying rate than the slow, 3) high temperature at fast rather than slow drying rate, and 4) high temperature at fast drying rate than low temperature at the slow rate
REFERENCE: Engelhard, A.W., "Chemical Sprays: Concentration, Drying Rate and Temperature Effects on Chrysanthemum Flower Quality", Florida State Hort. Soc. 85:370-374 (1973).

<5355>
CHEMICAL NAME: 2-Butenoic acid, 3-[dimethoxyphosphinyl)oxy]-, 1-phenylethyl ester, (E)-
CHEMICAL COMMON NAME: Crotoxyphos
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 8.6 lb/gal technical grade formulation and 4 lb/gal technical grade EC formulation of crotoxyphos (ciodrin)
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Significant growth reduction and serious foliar injury; EC formulation caused greater injury than technical grade formulation
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<5356>
CHEMICAL NAME: 2-Furancarboxylic acid
CHEMICAL COMMON NAME: Pyromucic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<5357>
<5357>
CHEMICAL NAME: 2-Furanmethanamine, N-[2,6 dinitro-4-(trifluoromethyl)phenyl-N-ethyl tetrahydro-
CHEMICAL COMMON NAME: CGA-11607
PLANT: Millet, foxtail (SETARIA ITALICA); Foxtail, green (SETARIA VIRIDIS); Foxtail, yellow (SETARIA GLAUCA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Grasses; Broadleaf weeds; Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.75 and 3.0 lb/A
APPLICATION METHODS: Preplant incorporated spray; 10 to 30 gal/A at 20 to 30 psi
EXPERIMENTAL CONDITIONS: Field study; locations in 6 states (MI, MO, NE, IL, IA, and OH)
EFFECTS: At 1.0 or 3.0 lb/A, effective control of foxtail millet with moderate control of remaining weeds and no adverse effect on soybean
COMMENTS: CGA-10832 gave good control of prevalent weed species throughout growing season; CGA-11607 and CGA-14397 gave inferior weed control compared to CGA-10832; weed control from trifluralin comparable at equivalent rates to CGA-10832, with no significant differences indicated; soybeans very tolerant to all herbicides, although 3 lb/A rate of trifluralin showed some early stunting
REFERENCE: LeBaron, H.M., R.R. Wilson, and T.D. Taylor, "Evaluation of CGA-10832 and Other Herbicides for Soybeans in the North Central States," Proc. N. Cent. Weed Contr. Conf. 26:44-48 (1971).

<5358>
CHEMICAL NAME: 2-Furanmethanamine, N-[2,6-dinitro-4-(trifluoromethyl)phenyl]tetrahydro-N-propyl-
CHEMICAL COMMON NAME: GS-39985
PLANT: Soybean (GLYCINE MAX); Velvetleaf (ABUTILON THEOPHRASTI); Millet, foxtail (SETARIA ITALICA)
EXPERIMENTAL DOSE: 1X10(-5), 1X10(-6), and 1X10(-7)M
APPLICATION METHODS: Solution addition to sand (75 ml/pot in greenhouse study); solution addition to nutrient agar (laboratory study)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand culture in pots (cups); temperature--21 C (day) and 17 C (night); evaluation time--28 days; laboratory study; temperature--30 C in darkened incubator
EFFECTS: At 1X10(-5)M, reduced growth of all test plants
COMMENTS: Dinitramine most toxic to each species; dinitramine, trifluralin, and BAS-3921 H most inhibitory of soybean shoot growth, while oryzalin, dinitramine, and BAS-3921 H most inhibitory of root growth
REFERENCE: Harvey, R.G., "Relative Phytotoxicities of Dinitroaniline Herbicides," Weed Sci. 21(6):517-520 (1973).

<5359>
CHEMICAL NAME: 2-Furanmethanamine, N-[2,6-dinitro-4-(trifluoromethyl)phenyl]tetrahydro-N-propyl-
CHEMICAL COMMON NAME: GS-39985
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 micro M to 1.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplast and mung bean hypocotyl assays; evaluation time--up to 3 hr
EFFECTS: Strong inhibition of one or more cyclic or noncyclic photophosphorylation reactions, mitochondrial oxidation of varied substrates, and ATPase activity
COMMENTS: 2,6-dinitroanilines inhibited both electron transport and phosphorylation in isolated chloroplasts and mitochondria; interference with photoproduction of ATP chloroplasts evidenced by increased sensitivity of photophosphorylation over the coupled photoreduction to the 2,6-dinitroanilines when water served as electron donor, and by inhibition of photophosphorylation mediated by PMS in an argon atmosphere
REFERENCE: Moreland, D.E., F.S. Farmer, and G.G. Hussey, "Inhibition of Photosynthesis and Respiration by Substituted 2,6-Dinitroaniline Herbicides," Pest. Biochem. & Phys. 1:342-353 (1971).

<5360>
CHEMICAL NAME: 2-Furanmethanamine, tetrahydro-N-[2,6-dinitro-4(trifluoromethyl)phenyl]-N-ethyltetrahydro-
CHEMICAL COMMON NAME: GS-38946
PLANT: Soybean (GLYCINE MAX); Velvetleaf (ABUTILON THEOPHRASTI); Millet, foxtail (SETARIA ITALICA)
EXPERIMENTAL DOSE: 1X10(-5), 1X10(-6), and 1X10(-7)M
APPLICATION METHODS: Solution addition to sand (75 ml/pot in greenhouse study); solution addition to nutrient agar (laboratory study)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand culture in pots (cups); temperature--21 C (day) and 17 C (night); evaluation time--28 days; laboratory study; temperature--30 C in darkened incubator
EFFECTS: At 1X10(-5)M, reduced growth of soybean and foxtail with slight growth reduction of velvetleaf
COMMENTS: Dinitramine most toxic to each species; dinitramine, trifluralin, and BAS-3921 H most inhibitory of soybean shoot growth, while oryzalin, dinitramine, and BAS-3921 H most inhibitory of root growth
REFERENCE: Harvey, R.G., "Relative Phytotoxicities of Dinitroaniline Herbicides," Weed Sci. 21(6):517-520 (1973).

<5361>
CHEMICAL NAME: 2-Furanmethanamine, tetrahydro-N-[2,6-dinitro-4(trifluoromethyl)phenyl]-N-ethyltetrahydro-
CHEMICAL COMMON NAME: GS-38946
PLANT: Spinach (SPINACIA OLERACEA); Bean, mung (PHASEOLUS AUREUS)
EXPERIMENTAL DOSE: 1.0 micro M to 1.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; isolated spinach chloroplast and mung bean hypocotyl assays; evaluation time--up to 3 hr
EFFECTS: Strong inhibition of one or more cyclic or noncyclic photophosphorylation reactions, mitochondrial oxidation of varied substrates, and ATPase activity
COMMENTS: 2,6-dinitroanilines inhibited both electron transport and phosphorylation in isolated chloroplasts and mitochondria; interference with photoproduction of ATP chloroplasts evidenced by increased sensitivity of photophosphorylation over the coupled photoreduction to the 2,6-dinitroanilines when water served as electron donor, and by inhibition of photophosphorylation mediated by PMS in an argon atmosphere
REFERENCE: Moreland, D.E., F.S. Farmer, and G.G. Hussey, "Inhibition of Photosynthesis and Respiration by Substituted 2,6-Dinitroaniline Herbicides," Pest. Biochem. & Phys. 1:342-353 (1971).

<5362>
CHEMICAL NAME: 2-Hexulofuranosonic acid, alpha-L-xylo-, 2-propynl ester
CHEMICAL COMMON NAME: RO7-6145
PLANT: Speedwell, creeping (VERONICA FILIFORMIS); Ryegrass, perennial (LOLIUM PERENNE)
EXPERIMENTAL DOSE: 3.0 to 8.0 lb/A; 80% WP
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate weed control at 6.0 lb/A with slight to moderate adverse effect of turfgrass
COMMENTS: Non-selective control achieved with glyphosate; selective control achieved with DCPA and RO7-6145; Ronstar not effective in controlling VERONICA FILIFORMIS
REFERENCE: Kaufmann, J.E., "Chemical Control of VERONICA FILIFORMIS in Turf," Proc. N.E. Weed Sci. Soc. 30:340-343 (1976).

<5363>
CHEMICAL NAME: 2-Hexulofuranosonic acid, 2,3:4,6-bis-O-(1-methylethylidene)-alpha-L-xylo-
CHEMICAL COMMON NAME: Dikegulac
PLANT: Nightshade, black (SOLANUM NIGRUM); Tomato (LYCOPERSICON ESCULENTUM); Thistle, Canada (CIRSIUM ARVENSE); Marigold, corn (CHRYSANTHEMUM SEGETUM); Dock, broad-leaf (RUMEX OBTUSIFOLIUS)
EXPERIMENTAL DOSE: 100 mg/sq m
APPLICATION METHODS: Postemergence spray treatments; volume equivalent of sprayer, 100 mg/sq m
EXPERIMENTAL CONDITIONS: Seeds sown in 80% clay and 20% peat soil mixture; greenhouse germinated with 20 to 26 C daylight temperature and 18-20 C night temperature, 16-hr photoperiod; seedlings transplanted 10 to 21 days after sowing
EFFECTS: Nightshade--moderate chlorosis (31-70%), mild leaf deformation; thistle--moderate necrosis; marigold--severe necrosis (71-100%); dock--mild chlorosis and leaf deformation
COMMENTS: Correlation of callus toxicity with seedling toxicity also reported--researchers note potential use of callus cultures to assess phytotoxicity
REFERENCE: Zilkah, S., P. R. Bocion, and J. Gressel, "Cell Cultures vs. Whole Plants For Measuring Phytotoxicity II. Correlatiions Between Phytotoxicity in Seedlings and Calli," Plant Cell Physiol. 18:657-670 (1977).

<5364>
CHEMICAL NAME: 2-Imidazolidinethione, 3-benzyl-5,5-bis(hydroxymethyl)-
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 100 ppm
APPLICATION METHODS: Germination in 5 cc. water solution containing test compound
EXPERIMENTAL CONDITIONS: Seeds germinated in Petri plates, 10 seeds per plate; 4 days growth in air-conditioned dark room at 24 C and 88% relative humidity--seedlings removed and shoots and roots measured
EFFECTS: 6% wheat root inhibition, no radish root inhibition
COMMENTS: Test compound closely related to imidazoline compounds; chemical structure given in paper
REFERENCE: Allen, S.E. and F. Skoog, "Phytotoxicity of Imidazoline Derivatives and Related Compounds," Plant Physiol. 26:611-624 (1951).

<5365>
CHEMICAL NAME: 2-Imidazolidinethione, 3-benzyl-5,5-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 100 ppm
APPLICATION METHODS: Germination in 5 cc. water solution containing test compound
EXPERIMENTAL CONDITIONS: Seeds germinated in Petri plates, 10 seeds per plate; 4 days growth in air-conditioned dark room at 24 C and 88% relative humidity--seedlings removed and shoots and roots measured
EFFECTS: 37% wheat root inhibition, 81% radish root inhibition
COMMENTS: Test compound closely related to imidazoline compounds; chemical structure given in paper
REFERENCE: Allen, S.E. and F. Skoog, "Phytotoxicity of Imidazoline Derivatives and Related Compounds," Plant Physiol. 26:611-624 (1951).

<5366>
CHEMICAL NAME: 2-Imidazolidinone, 3,5-(1,1-dimethylethyl)-1,3,4-thiadiazol-2-yl-4-hydroxy-1-methyl-
CHEMICAL COMMON NAME: Buthiazole
PLANT: Corn (ZEA MAYS); Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Crabgrass, large (DIGITARIA SANGUINALIS); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.38 and 0.75 lb/A
APPLICATION METHODS: Preemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Sassafras loam
EFFECTS: Effective control of lambsquarters and pigweed with moderate control of panicum (0.75 lb/A) end slight-moderate control of other weeds; no adverse effect on corn
COMMENTS: VEL 5052 not effective on lambsquarters or common ragweed; buthiazole (VEL 5026) very effective on fall panicum; combinations of VEL 5052 with buthiazole or atrazine effected excellent control of many annual weeds; combinations of buthiazole with alachlor produced excellent control of many weeds
REFERENCE: Ilnicki, R.D. and R.W. Michieka, "Weed Control in Corn with VEL 5052 and Buthiazole (VEL 5026) Applied Alone, and in Combination with Atrazine and Alachlor," Proc. Northeast. Weed Sci. Soc. 31:15-19 (1977).

<5367>
<5367>
CHEMICAL NAME: 2-Imidazoline, 1-isopropyl-2-nonyl-4,4-dimethyl-
PLANT: Corn (ZEA MAYS); Grasses; Pigweed, redroot (AMARANTHUS RETROFLEXUS); Broadleaf weeds
EXPERIMENTAL DOSE: 0.5, 1.0, and 2.0 lb/A
APPLICATION METHODS: Sprays in 80 gal water (1.6 liters per plot); pre-and postemergence
EXPERIMENTAL CONDITIONS: Field experiment; 2 by 10 hill plots with 4 replications sprayed immediately before or 10 days after emergence
EFFECTS: Preemergence--90% pigweed and other broadleaf weed control, corn and grasses not affected; postemergence--moderate damage to corn, unsatisfactory weed control
COMMENTS: Other imidazolines studied but no specific compounds named; toxicity is function of length and degree of saturation of alkyl group in the 2-position.
REFERENCE: Allen, S.E. and F. Skoog, "Phytotoxicity of Imidazoline Derivatives and Related Compounds," Plant Physiol. 26:611-624 (1951).

<5368>
CHEMICAL NAME: 2-Imidazoline, 1-isopropyl-2-undecyl-4,4-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS); Grasses; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 100 ppm; 2,4, and 6 lb/A
APPLICATION METHODS: Germination experiment--seeds germinated in 5 cc. water solution containing 100 ppm test compound; field experiment--treatments in 40, 80, and 120 gal sprays at 2,4, and 6 lb/A, preemergence and postemergence
EXPERIMENTAL CONDITIONS: Germination tests--Petri plate germination, 10 seeds per plate, wheat and radish, 4 days growth in dark room at 24 C and 88% relative humidity, root and shoot growth determined; field tests--5 by 12 ft soybean plots, very few weeds invaded plot, some grasses
EFFECTS: 95% wheat root inhibition, 98% radish root inhibition; no soybean damage from preemergence treatments, moderate injury from postemergence application; grasses relatively unaffected
COMMENTS: Other imidazolines studied but no specific compounds named; toxicity is function of length and degree of saturation of alkyl group in the 2-position
REFERENCE: Allen, S.E. and F. Skoog, "Phytotoxicity of Imidazoline Derivatives and Related Compounds," Plant Physiol. 26:611-624 (1951).

<5369>
CHEMICAL NAME: 2-Naphthalenol
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 67.6 mg/l.
EXPERIMENTAL CONDITIONS: Lateral roots used; mitotic index of control, 147
EFFECTS: Percentage of abnormal mitotic cells, 2.78%; mitotic index, 79
COMMENTS: Induced types of abnormalities--(1) disturbed type (disturbed metaphases, prophase-metaphases and disturbed ana-telophases) (2) lagging chromosomes, (3) stickiness, (4) fragmentation, and (5) cytomixis; tables in paper indicate percentages of each
REFERENCE: Amer, S.M. and E.M. Ali, "Cytological Effects of Pesticides IV. Mitotic Effects of Some Phenols," Cytologia 34:533-540 (1969).

<5370>
CHEMICAL NAME: 2-Naphthalenol
PLANT: Oat (AVENA SATIVA); Charlock, yellow (BRASSICA SINAPSIS VISIANI)
EXPERIMENTAL DOSE: 200 ppm; 25 lb/A
APPLICATION METHODS: Experiment 1--germination on absorbent paper imbibing an aqueous solution of 200 ppm; experiment 2--25 lb/acre rate equivalent added to soil
EXPERIMENTAL CONDITIONS: Experiment 1--4 replications, 10 day treatments, only water soluble compounds tested; experiment 2--12 X 12 in. boxes of soil, treatments and seed sowing on same day, assessments after 3 weeks, all compounds tested
EFFECTS: No effect on charlock or oat germination
REFERENCE: Templeman, W.G. and W.A. Sexton, "The Differential Effect of Synthetic Plant Growth Substances and Other Compounds Upon Plant Species I. Seed Germination and Early Growth Responses to Alpha-Naphthlacetic Acid and Compounds of the General Formula ArylOCH(2)COOR," Proc. R. Soc. London, Ser. B:133:300-313 (1946).

<5371>
CHEMICAL NAME: 2-Naphthocenecarboxamide,
4-(dimethylamino)-1,4,4a,5,5a,6,11,12a-octahydro-3,5,6,10,12,12a-hexahydroxy-6-m ethyl-1,11-dioxo-,
[4S-(4 alpha, 4a alpha, 5 alpha, 5a alpha, 6 beta, 12a alpha)]
CHEMICAL COMMON NAME: Oxytetracyclin
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Foliar spray daily for 12 days
EXPERIMENTAL CONDITIONS: Laboratory study; chloroplasts harvested from green and chlorotic leaves, homogenized, isolated, and purified; temperature--2C; electrophoresis
EFFECTS: Inhibited chlorophyll-complex synthesis
COMMENTS: Chloramphenicol, streptomycin, and oxytetracyclin inhibited synthesis of two chlorophyll-protein complexes and two other proteins; uncertain whether absent or weak bands of complexes result of inhibited protein synthesis or result of deficient chlorophyll
REFERENCE: Machold, O., "Lamellar Proteins of Green and Chlorotic Chloroplasts as Affected by Iron Deficiency and Antibiotics," Biochim. Biophys. Acta 238:324-331 (1971).

<5372>
CHEMICAL NAME: 2-Oxazoline, 2-undecyl-4-methyl-4-hydroxymethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 100 ppm
APPLICATION METHODS: Germination in 5 cc. water solution containing test compound
EXPERIMENTAL CONDITIONS: Seeds germinated in Petri plates, 10 seeds per plate; 4 days growth in air-conditioned dark room at 24 C and 88% relative humidity--seedlings removed and shoots and roots measured
EFFECTS: No wheat root inhibition, 19% radish root inhibition
COMMENTS: Test compound closely related to imidazoline compounds; chemical structure given in paper
REFERENCE: Allen, S.E. and F. Skoog, "Phytotoxicity of Imidazoline Derivatives and Related Compounds," Plant Physiol. 26:611-624 (1951).

<5373>
CHEMICAL NAME: 2-Oxazoline, 2-undecyl-4,4-dimethyl-
PLANT: Wheat (TRITICUM AESTIVUM); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 100 ppm
APPLICATION METHODS: Germination in 5 cc. water solution containing test compound
EXPERIMENTAL CONDITIONS: Seeds germinated in Petri plates, 10 seeds per plate; 4 days growth in air-conditioned dark room at 24 C and 88% relative humidity--seedlings removed and shoots and roots measured
EFFECTS: 33% wheat root inhibition, 37% radish root inhibition
COMMENTS: Test compound closely related to imidazoline compounds; chemical structure given in paper
REFERENCE: Allen, S.E. and F. Skoog, "Phytotoxicity of Imidazoline Derivatives and Related Compounds," Plant Physiol. 26:611-624 (1951).

<5374>
CHEMICAL NAME: 2-Penenoic acid, 2,3,5,5,5-pentachloro-4-oxo-, (Z)-
CHEMICAL COMMON NAME: AP-20
PLANT: Hibiscus (HIBISCUS ROSA); Guava (PSIDIUM GUAJAVA); Sorghum (SORGHUM BICOLOR); Cotton (GOSSIPIUM ARBOREUM)
EXPERIMENTAL DOSE: 0.3 to 7,560 micro g/leaf
APPLICATION METHODS: Applied as droplets to leaves with micropipette
EXPERIMENTAL CONDITIONS: Field study (hibiscus and guava); greenhouse study (sorghum and cotton)
EFFECTS: Leaf kill at 945 to 7560 micro g/leaf within 7 days
COMMENTS: Pentachlorophenol and AP-20 produced most rapid desiccation at high dosages; usually as effective as PCP and AP-20 within 1 to 2 days after treatment, and produced more extensive desiccation at lower dosages, especially on hibiscus, sorghum, and cotton; diquat, paraquat, cacodylic acid, and AP-20 produced complete defoliation of hibiscus within 5 days after treatment but diquat and paraquat were more effective at lower dosages than other defoliants; diquat completely defoliated hibiscus regardless of placement on leaf, but higher dosages required for effective desiccation when applied non-uniformly over leaf
REFERENCE: Bovey, R.W. and F.R. Miller, "Desiccation and Defoliation of Plants by Different Herbicides and Mixtures," Agron. J. 60(1):700-702 (1968).

<5375>
CHEMICAL NAME: 2-Pentenedioic acid, 3-[(dimethoxyphosphinyl)oxy]-, dimethyl ester
CHEMICAL COMMON NAME: Bomyl
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% WP and EC containing 4 lb technical Bomyl/gal formulations
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: Significant growth reduction; serious foliar damage after first spray treatment particularly at 0.25 and 0.125% concentrations; damage more serious with WP formulation than EC formulation
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<5376>
CHEMICAL NAME: 2-Propanesulfonamide, heptafluoro-N-(2,4-difluorophenyl)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI); Quackgrass (AGROPYRON REPENS); Crabgrass, smooth (DIGITARIA ISCHAEMUM); Foxtail, giant (SETARIA FABERI); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Purslane, common (PORTULACA OLERACEA); Mustard, wild (BRASSICA KABER); Morningglory, tall (IPOMOEA PURPUREA); Broadleaf weeds; Grasses
EXPERIMENTAL DOSE: Grasses--2.5 lb/A; broadleaf weeds--10 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; weeds grown in 6-in. plastic pots; sandy loam soil; data taken 2 weeks after treatment
EFFECTS: Grasses--greater than or equal to 50% kill; broadleaf weeds--greater than or equal to 50% kill
COMMENTS: Herbicidal activity greatest with halogen and sulfur aryl-substituted 1,1,1-trifluoro-N-phenylmethane-sulfonamides; activity and structure correlations indicate lipophilic effects more important for herbicidal activity with the 4-substituted than with the 3-substituted 1,1,1-trifluoro-N-phenylmethanesulfonamides; weeds grouped as grasses and broadleaves for tabulating results
REFERENCE: Trepka, R.D., J.K. Harrington, J.W. McConville, K.T. McGurran, A. Mendel, D.R. Pauly, J.E. Robertson, and J.T. Waddington, "Synthesis and Herbicidal Activity of Fluorinated N-Phenylalkanesulfonamides," J. Agric. Food Chem. 22(6):1111-1119 (1974).

<5377>
<5377>
CHEMICAL NAME: 2-Propanol, 1-[(2,3,6-trichlorobenzyl)oxyl]-
CHEMICAL COMMON NAME: HRS-587
PLANT: Bursage, wollyleaf (FRANSERIA TOMENTOSA)
EXPERIMENTAL DOSE: 11.0 and 22.0 kg/ha
APPLICATION METHODS: Soil sterilant application with and without incorporation; postemergence sprays at varied stages of plant development; liquid sprays at 188 l/ha; pellets or granules broadcast by hand
EXPERIMENTAL CONDITIONS: Field study; non-crop areas; time period--1962 to 1968; evaluation time--up to 3 yr; soil--clay loam
EFFECTS: Moderate control for up to 3 years as soil sterilant (22.0 kg/ha), but only slight control in postemergence application at 2.2 kg/ha
COMMENTS: Fenac controlled woollyleaf bursage for 3 years in noncropped areas; effective control of woollyleaf bursage obtained when treated at bud stage or earlier with ester formulation of 2,4-D
REFERENCE: Smith, D.T., A.F. Wiese, and A.W. Cooley, "Woollyleaf Bursage Response to Selected Herbicides," Weed Sci. 20(6):554-556 (1972).

<5378>
CHEMICAL NAME: 2-Propanone
CHEMICAL COMMON NAME: Acetone
PLANT: Lettuce (LACTUCA SATIVA); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 100%
APPLICATION METHODS: Seed soak
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; seeds soaked for 24 or 44 hr then placed on filter paper contained in petri plates; solvents removed by vacuum drying
EFFECTS: No adverse effect on germination of lettuce or pea seed after 44-hr soak
COMMENTS: Anhydrous dichloromethane had no effect on germination or on uptake of oxygen when lettuce seeds treated for up to 24 hours; in contrast, anhydrous acetone distinctly depressed uptake of oxygen; when coumarin applied together with dichloromethane, germination and uptake of oxygen inhibited
REFERENCE: Meyer, H. and A. M. Mayer, "Permeation of Dry Seeds With Chemicals: Use of Dichloromethane," Science 171:583-584 (1971).

<5379>
CHEMICAL NAME: 2-Propanone, 1,1,1,3,3,3-hexachloro-
CHEMICAL COMMON NAME: HCA
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, 10(-4)M, and 10(-5)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harwey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<5380>
CHEMICAL NAME: 2-Propanone, 1,1,1,3,3,3-hexachloro-
CHEMICAL COMMON NAME: Hexachloroacetone
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<5381>
CHEMICAL NAME: 2-Propen-1-ol
CHEMICAL COMMON NAME: Allyl alcohol
PLANT: Radish (RAPHANUS SATIVUS); Ryegrass, perennial (LOLIUM PERENNE); Bentgrass, black (AGROSTIS GIGANTEA); Plants
EXPERIMENTAL DOSE: 50, 75, and 100 lb/1000 sq ft
APPLICATION METHODS: Added to soil
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: At 6.0 lb rate, effective weed control with reduced germination of radish and ryegrass
COMMENTS: Several fertilizers and chemicals inhibited weed growth either by killing seeds or by killing seedlings shortly after germination; materials applied dry or as spray solutions and thoroughly mixed by cultivation or raking into upper 2 or 3 inches of soil; period of time after treatment before grass, radishes, alfalfa, or seedlings of tomato, cabbage, or other crops could be planted safely varied with different materials and amounts applied; sterilizing soils with fertilizers or chemicals appears very practical method of controlling weeds and fertilizing seedbeds in one operation; especially true of fertilizers which do not appreciably alter soil complex and which do not leave residual toxicity for long periods
REFERENCE: DeFrance, J.A., R.S. Bell, and T.E. Odland, "Killing Weed Seeds in the Grass Seedbed by the Use of Fertilizers and Chemicals," J. Am. Soc. Agron. 39:530-535 (1947).

<5382>
CHEMICAL NAME: 2-Propen-1-ol
CHEMICAL COMMON NAME: Allyl alcohol
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:1000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<5383>
CHEMICAL NAME: 2-Propenal
CHEMICAL COMMON NAME: Acrolein
PLANT: Lily (LILIUM LONGIFLORUM)
EXPERIMENTAL DOSE: 0.40, 1.40, and 1.70 ppm
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Fumigation chamber; incubation at 28 C
EFFECTS: At 5 hr exposure, total loss of pollen viability at all concentrations with similar loss after one hr at 1.7 ppm; reduced pollen tube length at other concentrations/exposures
COMMENTS: Marked inhibition of tube elongation occurred with two combinations of two gases and moderate inhibition occurred with three combinations of two gases; major atmospheric pollutants such as SO(2), NO(2), and O(3) may enhance each other's phytotoxicity; aldehydes may be synergistic in their effects on plants
REFERENCE: Masaru, N., F. Syozo, and K. Saburo, "Effects of Exposure to Various Injurious Gases on Germination of Lily Pollen," Environ. Pollut. 11(3):181-187 (1976).

<5384>
CHEMICAL NAME: 2-Propenal
CHEMICAL COMMON NAME: Acrolein
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 3.0 to 10.0 ppmw
APPLICATION METHODS: Injected under surface of water by spray nozzle at 120 psi
EXPERIMENTAL CONDITIONS: Field study; naiads growing in 2 locations in FL; time period--1960 to 1962
EFFECTS: Effective control of naiad at 10 ppmw for 8 wk
COMMENTS: Most promising of 13 herbicides for control of southern naiad were acrolein, endothall, diquat, and paraquat; acrolein and endothall gave most rapid kill of southern naiad but retreatment necessary at end of 16 weeks
REFERENCE: Blackburn, R.D. and L.W. Weldon, "Control of Southern Naiad in Florida Drainage and Irrigation Channels," Weeds 12(4):295-298 (1964).

<5385>
CHEMICAL NAME: 2-Propenal
CHEMICAL COMMON NAME: Acrolein
PLANT: Pondweed, curly-leaf (POTOMOGETON CRISPUS); Elodea (ELODEA DENSA)
EXPERIMENTAL DOSE: 1.0 to 1.5 gal/cu ft/sec for 30-45 min; 0.5 to 1000 ppm
APPLICATION METHODS: Addition to flowing canal water
EXPERIMENTAL CONDITIONS: Field study (pond weed) and laboratory study (ELODEA)
EFFECTS: Effective water weed control
COMMENTS: Injection of acrolein into irrigation canals killed submersed weeds, thereby reducing flow resistance and increasing capacity; in 20-mile canal, 150 gallons raised throughput from 311 to 552 cu ft/sec; acrolein also effectively eradicated aquatic snails
REFERENCE: van Overbeek, J., W.J. Hughes, and R. Blondeau, "Acrolein for the Control of Water Weeds and Disease-Carrying Water Snails," Sci. 129:335-336 (1959).

<5386>
CHEMICAL NAME: 2-Propenal
CHEMICAL COMMON NAME: Acrolein
PLANT: Waterweed (ELODEA CANADENSIS); Naiad, Southern (NAJAS GUADALUPENSIS); Coontail (CERATOPHYLLUM DEMERSUM)
EXPERIMENTAL DOSE: 5.0 and 20.0 lb/A; EC and ester
APPLICATION METHODS: Addition by syringe to water containing test species (submersed species) and spray (100 gal/A at 20 psi)
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--80 F; light intensity--60 to 80 ft c; photoperiod--10 hr; evaluation time--2 to 8 wk with continuous and varied (0.5 to 336 hr) contact
EFFECTS: Effective or near-effective control at all rates
COMMENTS: Among 75 herbicides evaluated on three species of submersed weeds only diquat, endothal, and acrolein gave 85% or better control at 1 ppmw in still-water tests; only acrolein and endothal effective on submersed weeds at 1 ppmw in limited-exposure test; evaluation of 17 herbicides on three species of floating aquatic weeds indicated diquat effective
REFERENCE: Blackburn, R.D., "Evaluating Herbicides Against Aquatic Weeds," Weeds 11(1):21-24 (1963).

<5387>
CHEMICAL NAME: 2-Propenal
CHEMICAL COMMON NAME: Acrolein
PLANT: Peanut (ARACHIS HYPOGAEA); Sorghum (SORGHUM VULGARE); Bean, hyacinth (DOLICHOS LAB LAB); Cotton (GOSSYPIUM BARBADENSE); Niad (NAJAS sp.); Hornwort (CERATOPHYLLUM sp.); Morningglory (IPOMOEA sp.)
EXPERIMENTAL DOSE: 15, 18, 21, 25, and 50 ppm
APPLICATION METHODS: Crop test--compounds in irrigation water; canal test--compounds added to canal water
EXPERIMENTAL CONDITIONS: Crop test--effect of furrow and flood irrigation studied on sorghum, bean, peanut,

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<5387> CONT.
and cotton in plot studies at 15, 25, and 50 ppm; canal test--acrolein added to canal, 25 ppm at injection point and 18 ppm 1.6 km downstream, effect on niad, hornwort, and morning glory studied
EFFECTS: Crop test--furrow irrigation at 25 and 50 ppm toxic only to cotton (temporary foliage injury), flood irrigation with 15 ppm injured all seedlings; canal test--complete destruction of submerged vegetation within one week, emergent moringglory badly scorched but not killed
COMMENTS: Canal test included snail toxicity test
REFERENCE: Ferguson, F.F., I.K. Dawood, and R. Blondeau, "Preliminary Field Trials of Acrolein in the Sudan," Bull. W.H.O. 32:243-248 (1965).

<5388>
CHEMICAL NAME: 2-Propenamide, N-(3,4-dichlorophenyl)-2-methyl-
CHEMICAL COMMON NAME: Dicryl
PLANT: Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 3.0 lb/A
APPLICATION METHODS: Postemergence spray ; EC formulation
EXPERIMENTAL CONDITIONS: Greenhouse, field, and environmental chamber; applications made at 6 hr intervals for a full day
EFFECTS: Reduced growth of seedling plants; early morning spray more effective than spray in evening
COMMENTS: Inhibition of growth of cotton seedlings varied diurnally; inhibition strongest when plants treated at about daybreak
REFERENCE: Gosselink, J.G. and L.C. Standifer, "Diurnal Rhythm of Sensitivity of Cotton Seedlings to Herbicides," Science 158:120-121 (1967).

<5389>
CHEMICAL NAME: 2-Propenamide, N-(3,4-dichlorophenyl)-2-methyl-
CHEMICAL COMMON NAME: Dicryl
PLANT: Bluegrass, annual (POA ANNUA); Bentgrass (AGROSTIS sp.)
EXPERIMENTAL DOSE: 6.0 lb/A
APPLICATION METHODS: Preplant solution soak
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Puyallup fine sandy loam; pH--5.8; temperature--approx 60 F
EFFECTS: No effect on bluegrass or bentgrass
COMMENTS: Dacthal, betasan, dipropalin, trifluralin, and enide significantly controlled annual bluegrass for periods of 9 to 12 weeks; dacthal and betasan completely nonphytotoxic to mature turf
REFERENCE: Goss, R.L., "Preemergence Control of Annual Bluegrass (POA ANNUA L.)," J. Agron. 56(1):479-481 (1964).

<5390>
CHEMICAL NAME: 2-Propenamide, N-(3,4-dichlorophenyl)-2-methyl-
CHEMICAL COMMON NAME: Dicryl
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 5.0 and 10.0 ppmw
APPLICATION METHODS: Injected under surface of water by spray nozzle at 120 psi
EXPERIMENTAL CONDITIONS: Field study; naiads growing in 2 locations in FL; time period--1960 to 1962
EFFECTS: Slight control of naiad at 10 ppmw for 4 wk
COMMENTS: Most promising of 13 herbicides for control of southern naiad were acrolein, endothall, diquat, and paraquat; acrolein and endothall gave most rapid kill of southern naiad but retreatment necessary at end of 16 weeks
REFERENCE: Blackburn, R.D. and L.W. Weldon, "Control of Southern Naiad in Florida Drainage and Irrigation Channels," Weeds 12(4):295-298 (1964).

<5391>
CHEMICAL NAME: 2-Propenenitrile
CHEMICAL COMMON NAME: Acrylon
PLANT: Radish (RAPHANUS SATIVUS); Ryegrass, perennial (LOLIUM PERENNE); Bentgrass, black (AGROSTIS GIGANTEA); Plants
EXPERIMENTAL DOSE: 10 and 20 lb/1000 sq ft
APPLICATION METHODS: Added to soil
EXPERIMENTAL CONDITIONS: Greenhouse and field studies
EFFECTS: Slight weed control with no adverse effect on germination of test plants at 20 lb rate
COMMENTS: Several fertilizers and chemicals inhibited weed growth either by killing seeds or by killing seedlings shortly after germination; materials applied dry or as spray solutions and thoroughly mixed by cultivation or raking into upper 2 or 3 inches of soil; period of time after treatment before grass, radishes, alfalfa, or seedlings of tomato, cabbage, or other crops could be planted safely varied with different materials and amounts applied; sterilizing soils with fertilizers or chemicals appears very practical method of controlling weeds and fertilizing seedbeds in one operation; especially true of fertilizers which do not appreciably alter soil complex and which do not leave residual toxicity for long periods
REFERENCE: DeFrance, J.A., R.S. Bell, and T.E. Odland, "Killing Weed Seeds in the Grass Seedbed by the Use of Fertilizers and Chemicals," J. Am. Soc. Agron. 39:530-535 (1947).

<5392>
CHEMICAL NAME: 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
CHEMICAL COMMON NAME: ABS
PLANT: (NEPHTHYTIS AFZELII); Philodendron (PHILODENDRON PANDURAEFORME); Dracaena (DRACAENA SANDERIANA); Fuschia; Semperflorens; Coleus (COLEUS BLUMEI); Florida beauty (DRACENA GODSEFFIANA); Violet, African (SAINTPAULA IONANTNA); Peperomia (PEPEROMIA OBTUSIFOLIA); Chrysanthemum (CHRYSANTHEMUM MORIFLORUM); Carnation; Snapdragon (ANTIRRHINUM MAJUS); Lantana (LANTANA CAMARA); Begonia, Rieger (BEGONIA sp.); Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 0.5 to 50.0 ppm

<5392> CONT.
APPLICATION METHODS: Added to soil as water for growth
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; exposure time--20 days and 5 mo.
EFFECTS: No consistent reduction in growth or quality of plants
COMMENTS: No consistently adverse effects on growth of plants in good greenhouse soils continuously treated with ABS solutions much higher than expected in water available to plant growers; other impurities in water more likely to harm plants than alkyl benzene sulfonate
REFERENCE: Bing, A. and J.W. Boodley, "Are Detergents a Problem to Plant Growers?," N.Y. State Flower Growers Bull. 226:4-6 (1964).

<5393>
CHEMICAL NAME: 2-Propenoic acid, 2,3-dichloro-
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<5394>
CHEMICAL NAME: 2-Propenoic acid, 3-(1-naphthalenyloxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 60 micro M (IC-50); E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5395>
CHEMICAL NAME: 2-Propenoic acid, 3-(2-bromophenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 2.2 micro M (IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Significantly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5396>
CHEMICAL NAME: 2-Propenoic acid, 3-(2-chlorophenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 1.1 micro M (IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Significantly inhibited shoot elongation of germination barnyard grass seed; E form much more inhibitory than Z form
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5397>
CHEMICAL NAME: 2-Propenoic acid, 3-(2-fluorophenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 20 micro M (IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Significantly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5398>
<5398>
CHEMICAL NAME: 2-Propenoic acid, 3-(2-furanyl)-
CHEMICAL COMMON NAME: Furylacrylic acid
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Plants
EXPERIMENTAL DOSE: 1.0%
APPLICATION METHODS: Foliar spray
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Killed tomato plants and one or more weed species
COMMENTS: Monochloroacetic and undecylenic acids (most effective compounds) killed young weed seedlings without causing adverse residual effects on most crops when applied as preemergence and between-row postemergence sprays; both herbicides selective; degree of selectivity varied with species of weeds and crop plants
REFERENCE: Hitchcock, A.E., P.W. Zimmerman, and H. Kirkpatrick, "Chemical Weed Control in Corn, Cabbage, Tomato, and Other Crop Plants," Proc. N.E. Weed Cont. Conf. pp 105-108 (1951).

<5399>
CHEMICAL NAME: 2-Propenoic acid, 3-(2-hydroxyphenyl)-
CHEMICAL COMMON NAME: o-coumaric acid
PLANT: Clover, red (TRIFOLIUM PRATENSE)
EXPERIMENTAL DOSE: 1:20 dilution to undiluted filtrate
APPLICATION METHODS: Solution soak of pregerminated seed
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination for 24 hr prior to solution exposure; evaluation time--24 hr
EFFECTS: No inhibition of root elongation
COMMENTS: Inhibition of root-elongation by culture filtrates of R. LEGUMINICOLA mainly due to large amounts of cinnamic, phenylacetic, benzoic, and o-coumaric acids; in the case of R. SOLANI, it was restricted to phenylacetic and m-hydroxyphenylacetic acids in addition to an unidentified acid
REFERENCE: Mizuno, M., K. Kohmoto, S. Nishimura, and N. Nishihara, "Pathochemical Studies on Rhizoctonia Disease. V. Phytotoxic metabolites of RHIZOCTONIA LEGUMINICOLA," J. Fac. Agric. Tottori Univ. 9:1-7 (1974).

<5400>
CHEMICAL NAME: 2-Propenoic acid, 3-(2-hydroxyphenyl)-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 30, 23, 25, and 21% growth at 100, 200, 300, and 400 ppm, respectively
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<5401>
CHEMICAL NAME: 2-Propenoic acid, 3-(2-iodophenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 8.9 micro M (IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5402>
CHEMICAL NAME: 2-Propenoic acid, 3-(2-methoxyphenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 19 micro M (IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5403>
CHEMICAL NAME: 2-Propenoic acid, 3-(2-methylphenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 82 micro M (IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5404>
CHEMICAL NAME: 2-Propenoic acid, 3-(2-naphthalenyloxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 140 micro M (IC-50); E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5405>
CHEMICAL NAME: 2-Propenoic acid, 3-(2,3-dichlorophenoxy)-, ethyl ester, (E)
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 0.9 micro M (IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Significantly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5406>
CHEMICAL NAME: 2-Propenoic acid, 3-(2,4-dichlorophenoxy)-, cyanomethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.69 M; barnyardgrass--5.95 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<5407>
CHEMICAL NAME: 2-Propenoic acid, 3-(2,4-dichlorophenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 0.38 micro M (IC-50); E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Significantly inhibited shoot elongation of germination barnyard grass seed; E form much more inhibitory than Z form
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5408>
CHEMICAL NAME: 2-Propenoic acid, 3-(2,4-dichlorophenoxy)-, 1-cyanoethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.36 M; barnyardgrass--6.12 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<5409>
<5409>
CHEMICAL NAME: 2-Propenoic acid, 3-(2,4-dichlorophenoxy)-, 2-amino-2-oxoethyl ester
PLANT: Rice (ORYZA SATIVA); Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: Rice--4.32 M; barnyardgrass--5.97 M
EXPERIMENTAL CONDITIONS: Inhibition of shoot elongation observed
EFFECTS: Shoot elongation inhibited ton one-half of control length
COMMENTS: Compound synthesis described; concentrations determined by observation and calculation--observed concentrations reported as experimental concentrations
REFERENCE: Fujinami, A., T. Satomi, and A. Mine, "Structure-Activity Study of Herbicidal N-Chloroacetyl-N-Phenylglycine Esters," Pest. Biochem. Physiol. 6:287-295 (1976).

<5410>
CHEMICAL NAME: 2-Propenoic acid, 3-(2,4,5-trichlorophenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 67 micro M (IC-50); E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5411>
CHEMICAL NAME: 2-Propenoic acid, 3-(2,5-dichlorophenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 3.5 micro M (IC-50); E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Significantly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5412>
CHEMICAL NAME: 2-Propenoic acid, 3-(2,6-dichlorophenyl)-
PLANT: Alfalfa (MEDICAGO SATIVA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tomato (LYCOPERSICON ESCULENTUM); Clover, ladino (TRIFOLIUM REPENS); Mustard (BRASSICA JAPONICA); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 10(-4), 10(-5), 10(-6), and 10(-7) M
APPLICATION METHODS: Plants grown in nutrient solution
EXPERIMENTAL CONDITIONS: Nutrient test tube assembly; randomized block design using two replications; controlled environment chamber at 70 F and 80 F, night and day temperature, respectively; observations made 18 days after seeds exposed to chemical
EFFECTS: 10(-4) M moderately toxic to clover and alfalfa, minor toxicity to other plants; minor or no phytotoxicity at other concentrations
COMMENTS: Order of activity of substituted benzonitriles and derivatives dissimilar to benzoic acids and phenoxyalkylcarboxylic acids; 2,6-dibromobenzonitrile most phytotoxic to all species, 2,6-dimethylbenzonitrile least toxic; 10(-4) M concentrations showed some phytotoxicity to all species
REFERENCE: Gentner, W.A. and L.L. Danielson, "Phyto Toxic Properties of Substituted Benzonitriles and Derivatives," Weed Sci. 18(5):551-555 (1970).

<5413>
CHEMICAL NAME: 2-Propenoic acid, 3-(3-chlorophenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 34 micro M (IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5414>
CHEMICAL NAME: 2-Propenoic acid, 3-(3-methoxyphenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 16 micro M (IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5415>
CHEMICAL NAME: 2-Propenoic acid, 3-(3-methylphenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 37 micro M (IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5416>
CHEMICAL NAME: 2-Propenoic acid, 3-(3,4-dichlorophenoxy)-, ethyl ester (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 45 micro M (IC-50); E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5417>
CHEMICAL NAME: 2-Propenoic acid, 3-(3,4-dihydroxyphenyl)-
CHEMICAL COMMON NAME: Caffeic acid
PLANT: Bromegrass (BROMUS sp.); Bluestem, little (ANDROPOGON SCOPARIUS)
EXPERIMENTAL DOSE: 155.12, 161.65, 206.32, 314.21, 537.68 and 642.21 ug/g dried oven soil
APPLICATION METHODS: Seeds watered with solution containing phytotoxin and phosphate buffer, pH 5.65
EXPERIMENTAL CONDITIONS: Phytotoxin extracted from bottomland soil dominated by green ash, bur oak and hackberry trees; soil samples taken in late September, late January and in April--10 samples at 0-15 and 15-30 cm depths each time; seeds germinated in petri dishes to which toxin-containing solution added; germination percentages based on control as 100%
EFFECTS: September samples--155.12 ug/g from 0-15 cm gave 102% bromegrass and 97.3% bluestem germination, 206.32 ug/g from 15-30 cm gave 91% bromegrass and 88.2% bluestem germination; January samples--642.21 ug/g from 0-15 cm gave 34.3% bromegrass and 29.3% bluestem germination, 161.65 ug/g from 15-30 cm gave 51.3% bromegrass and 41.2% bluestem germination; April samples--537.68 ug/g from 0-15 cm gave 47% bromegrass and 58.3% bluestem germination, 314.21 ug/g from 15-30 cm gave 42.8% bromegrass and 38.7% bluestem germination
COMMENTS: January phytotoxins higher in 0-15 cm depth than 15-30 cm depth; 0-15 cm amounts show consistent decrease from January to April and September, 15-30 cm amounts show increase over same period--explanation on basis of leaching
REFERENCE: Lodhi, M.A.K., "Soil-Plant Phytotoxicity and its Possible Significance in Patterning of Herbaceous Vegetation in a Bottomland Forest," Am. J. Bot. 62(6):618-622 (1975).

<5418>
CHEMICAL NAME: 2-Propenoic acid, 3-(3,4-dihydroxyphenyl)-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 110, 92, 100, and 82% growth at 100, 200, 300, and 400 ppm, respectively
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<5419>
CHEMICAL NAME: 2-Propenoic acid, 3-(3,5-dichlorophenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 90 micro M (IC-50); E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5420>
<5420>
CHEMICAL NAME: 2-Propenoic acid, 3-(4-chlorophenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 16 micro M (IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5421>
CHEMICAL NAME: 2-Propenoic acid, 3-(4-hydroxy-3-methoxyphenyl)-
CHEMICAL COMMON NAME: Ferulic acid
PLANT: Bromegrass (BROMUS sp.); Bluestem, little (ANDROPOGON SCOPARIUS)
EXPERIMENTAL DOSE: 285.44, 316.01, 391.48, 516.01, 588.07 and 701.3 ug/g oven dried soil
APPLICATION METHODS: Seeds watered with solution containing phytotoxin and phosphate buffer, pH 5.65
EXPERIMENTAL CONDITIONS: Phytotoxin extracted from bottomland soil dominated by green ash, bur oak and hackberry trees; soil samples taken in late September, late January and in April--10 samples at 0-15 and 15-30 cm depths each time; seeds germinated in petri dishes to which toxin-containing solution added; germination percentages based on control as 100%
EFFECTS: September samples--285.44 ug/g from 0-15 cm depth gave 97% bromegrass and 99.5% bluestem germination, 316.01 ug/g from 15-30 cm depth gave 78.2% bromegrass and 60.5% bluestem germination; January samples--701.30 ug/g from 0-15 cm gave 38.7% bromegrass and 24% bluestem germination, 516.01 ug/g from 15-30 cm gave 42% bromegrass and 31% bluestem germination; April samples--588.07 ug/g from 0-15 cm gave 51.5% bromegrass and 49.8% bluestem germination, 391.48 ug/g from 15-30 cm gave 59% bromegrass and 47.2% bluestem germination
COMMENTS: January phytotoxins higher in 0-15 cm depth than 15-30 cm depth; 0-15 cm amounts show consistent decrease from January to April and September, 15-30 cm amounts show increase over same period--explanation on basis of leaching
REFERENCE: Lodhi, M.A.K., "Soil-Plant Phytotoxicity and its Possible Significance in Patterning of Herbaceous Vegetation in a Bottomland Forest," Am. J. Bot. 62(6):618-622 (1975).

<5422>
CHEMICAL NAME: 2-Propenoic acid, 3-(4-hydroxyphenyl)-
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 1:2000
APPLICATION METHODS: Solution-soaked cotton placed on petiole
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No curvature induced
COMMENTS: Of 31 compounds investigated, none had noticeable effect on tomato or bean petioles
REFERENCE: Davies, W., G.A. Atkins, and P.C.B. Hudson, "The Effect of Ascorbic Acid and Certain Indole Derivatives on the Regeneration and Germination of Plants," Ann. Bot. 1:329-351 (1937).

<5423>
CHEMICAL NAME: 2-Propenoic acid, 3-(4-hydroxyphenyl)-
CHEMICAL COMMON NAME: p-coumaric acid
PLANT: Clover, red (TRIFOLIUM PRATENSE)
EXPERIMENTAL DOSE: 1:20 dilution to undiluted filtrate
APPLICATION METHODS: Solution soak of pregerminated seed
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination for 24 hr prior to solution exposure; evaluation time--24 hr
EFFECTS: Inhibition of root elongation
COMMENTS: Inhibition of root-elongation by culture filtrates of R. LEGUMINICOLA mainly due to large amounts of cinnamic, phenylacetic, benzoic, and o-coumaric acids; in the case of R. SOLANI, it was restricted to phenylacetic and m-hydroxyphenylacetic acids in addition to an unidentified acid
REFERENCE: Mizuno, M., K. Kohmoto, S. Nishimura, and N. Nishihara, "Pathochemical Studies on Rhizoctonia Disease. V. Phytotoxic metabolites of RHIZOCTONIA LEGUMINICOLA," J. Fac. Agric. Tottori Univ. 9:1-7 (1974).

<5424>
CHEMICAL NAME: 2-Propenoic acid, 3-(4-hydroxyphenyl)-
CHEMICAL COMMON NAME: p-coumaric acid
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 1X10(-5) to 1X10(-3)M
APPLICATION METHODS: Seed germination; addition to soil
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--30 to 34 C; evaluation time--5 da; greenhouse study; pot culture
EFFECTS: Stimulated growth of radicle and plumule but inhibited seedling growth at highest concentrations; no adverse effect on germination percentage
COMMENTS: Lower concentrations of vanillic, salicylic, p-hydroxybenzoic, p-coumaric, protocatechuic, and fumaric acids stimulatory to development of radicals and plumules of paddy seeds; increasing levels of acids decreased favourable effect, except that of fumaric acid; root and shoot growth of paddy seedlings retarded even at lower concentrations, and higher levels appreciably detrimental
REFERENCE: Gaur, A.C. and R.P. Pareek, "A Study on the Effect of Certain Phenolic Acids and Fumaric Acid in Soil on the Development of Paddy Seedlings and Nitrogen-Fixing Bacteria," Zbl. Bakt. Abt. II. 131:148-156 (1976).

<5425>
CHEMICAL NAME: 2-Propenoic acid, 3-(4-hydroxyphenyl)-
CHEMICAL COMMON NAME: p-Coumaric acid
PLANT: Bromegrass (BROMUS sp.); Bluestem, little (ANDROPOGON SCOPARIUS)
EXPERIMENTAL DOSE: 309.95 , 369.35, 454.98, 695.01, 862.8 and 1100.2 ug/g oven dried soil
APPLICATION METHODS: Seeds watered with solution containing phytotoxin and phosphate buffer, pH 5.65
EXPERIMENTAL CONDITIONS: Phytotoxin extracted from bottomland soil dominated by green ash, bur oak and hackberry trees; soil samples taken in late September, late January and in April--10 samples at 0-15 and 15-30 cm depths each time; seeds germinated in petri dishes to which toxin-containing solution added; germination percentages based on control as 100%
EFFECTS: January samples--1100.2 ug/g from 0-15 cm depth showed 24% bromegrass and 17.4% bluestem germination, 454.89 ug/g from 15-30 cm depth showed 46.5% bromegrass and 38% bluestem germination; September samples--309.95 ug/g from 0-15 cm gave 63.7% bromegrass and 79.4% bluestem germination, 369.35 ug/g from 15-30 cm gave 52% bromegrass and 58.8% bluestem germination; April samples--862.8 ug/g from 0-15 cm gave 35.3% bromegrass and 26% bluestem germination, 695.01 ug/g from 15-30 cm gave 42.7% bromegrass and 41.3% bluestem germination
COMMENTS: January phytotoxins higher in 0-15 cm depth than 15-30 cm depth; 0-15 cm amounts show consistent decrease from January to April and September, 15-30 cm amounts show increase over same period--explanation on basis of leaching
REFERENCE: Lodhi, M.A.K., "Soil-Plant Phytotoxicity and its Possible Significance in Patterning of Herbaceous Vegetation in a Bottomland Forest," Am. J. Bot. 62(6):618-622 (1975).

<5426>
CHEMICAL NAME: 2-Propenoic acid, 3-(4-hydroxyphenyl)-
CHEMICAL COMMON NAME: P-coumaric acid
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<5427>
CHEMICAL NAME: 2-Propenoic acid, 3-(4-hydroxyphenyl)-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 89, 72, 55, and 41% growth at 100, 200, 300, and 400 ppm, respectively
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<5428>
CHEMICAL NAME: 2-Propenoic acid, 3-(4-methoxyphenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 49 micro M (IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5429>
CHEMICAL NAME: 2-Propenoic acid, 3-(4-methylphenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 29 micro M (IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5430>
<5430>
CHEMICAL NAME: 2-Propenoic acid, 3-[(2-chloro-4-methylphenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 1.5 micro M (IC-50); E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Significantly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5431>
CHEMICAL NAME: 2-Propenoic acid, 3-[(4-chloro-2-methylphenoxy)-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 21 micro M (IC-50); E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5432>
CHEMICAL NAME: 2-Propenoic acid, 3-phenoxy-, ethyl ester, (E)-
PLANT: Barnyardgrass (ECHINOCHLOA CRUSGALLI)
EXPERIMENTAL DOSE: 10 micro M(IC-50), E and Z mixture
APPLICATION METHODS: Immersed in test solution
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--6.5 days; 28 C; light intensity--9000 lux
EFFECTS: Slightly inhibited shoot elongation of germinating barnyard grass
COMMENTS: Herbicidal activity of beta-phenoxyacrylates highly correlated with halogen atom in 2-position of benzene ring; trans-isomers much more active than cis-isomers
REFERENCE: Fujinami, A. and A. Mine, "Effect of Substituted Beta-Phenyxyacrylates on Shoot Elongation of Barnyard-Grass," Agr. Biol. Chem. 34(8):1157-1161 (1970).

<5433>
CHEMICAL NAME: 2-Propenoic acid, 3-phenyl-
CHEMICAL COMMON NAME: Cinnamic acid
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Moderate damage of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<5434>
CHEMICAL NAME: 2-Propenoic acid, 3-phenyl, (E)-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 43, 20, 24, and 25% growth at 100, 200, 300, and 400 ppm, respectively
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<5435>
CHEMICAL NAME: 2-Propenoic acid, 3,4-[methylenebis(oxy)]-3-phenyl-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 2.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: Slight phytotoxic effect of peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<5436>
CHEMICAL NAME: 2-Propenoic aicd, 3-(4-hydroxy-3-methoxyphenyl)-
PLANT: Lettuce (LACTUCA SATIVA)
EXPERIMENTAL DOSE: 100, 200, 300, and 400 ppm
APPLICATION METHODS: Seeds germinated on filter paper soaked in test compound
EXPERIMENTAL CONDITIONS: Petri dish study; sponges containing test compound placed around inside Periphery of Petri dish; 10 seeds placed on chromatographic paper in Petri dish; plate sealed with parafilm;radicle lengths measured, results expressed as percent of control
EFFECTS: 83, 88, 77, and 77% growth at 100, 200, 300, and 400 ppm, respectively
REFERENCE: Chou, C.-H. and Z.A. Patrick, "Identification and Phytotoxic Activity of Compounds Produced During Decomposition of Corn and Rye Residues in Soil," Chem. Ecol. 2(3):369-387 (1976).

<5437>
CHEMICAL NAME: 2-Propenol, 2-methyl-
PLANT: Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: 0.3 mM
APPLICATION METHODS: Plants grown in solution containing chemical being tested
EXPERIMENTAL CONDITIONS: After germination in petri dishes, seedlings transplanted to reagent tube containing 6 g vermiculite and 25 ml Hoagland solution 2 that included 0.3 mM of chemical being tested; plants grown in growth chamber--16 hr photoperiod, 25 C day temperature and 12 C night temperature
EFFECTS: Minor toxicity
COMMENTS: General toxic effects reported for all chemicals studied--growth retardation, tip burn followed by leaf scorch and death
REFERENCE: Chen, S-C. and R.M. Elofson, "Phytotoxicity of Organic and Inorganic Iodides to AVENA FATUA," J. Agric. Food Chem. 26(1):287-289 (1978).

<5438>
CHEMICAL NAME: 2-Propyn-1-ol, phenyl carbamate
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of fenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<5439>
CHEMICAL NAME: 2-Pyridinamine
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 4.0 to greater than 2.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5440>
CHEMICAL NAME: 2-Pyridinecarboxylic acid
CHEMICAL COMMON NAME: Picolinic acid
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 3.1 to 2.1 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Severe inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5441>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 3,6-dichloro-
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 7.3 to 4.3 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Moderate inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred

<5441>
<5441> CONT.
persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5442>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 3,6-dichloro-
PLANT: Rapeseed (BRASSICA CAMPESTRIS); Chamomile, wild (MATRICARIA sp.); Chickweed, common (STELLARIA MEDIA); Cleavers (GALIUM APARINE)
EXPERIMENTAL DOSE: 30 to 100 g/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; time period--1974 to 1976; 76 trials in UK, France, and Sweden
EFFECTS: Moderate MATRICARIA control only at highest rates and no adverse effect on STELLARIA, GALIUM, or rapeseed
COMMENTS: Under range of climatic and cultural conditions, combinations of two herbicides, benazolin ester, and 3,6 dichloropicolinic acid provided extremely effective broad-leaved weed control whilst maintaining good margin of crop safety
REFERENCE: Rea, B.L., R.A. Palmer, and A. de St. Blanquat, "Weed Control in Rapeseed With Benazolin Ester/3,6 Dichloropicolinic Acid Mixtures," Proc. 1976 Br. Crop Protection Conf. 2:517-624 (1976).

<5443>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 3,6-dichloro-, compd. with amino-ethanol (1:1)
CHEMICAL COMMON NAME: DOWCO 290
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 3.9 to 250 ppbw (soil)
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Malmo clay loam
EFFECTS: Growth reduction at 31.2 to 250 ppmw
COMMENTS: DOWCO 290 in combination with 2,4-D effectively controlled tartary buckwheat without injury to wheat or barley; DOWCO 290 alone left no detectable residue in Alberta soil three months after application
REFERENCE: Vanden Born, W.H. and R.J. Schraa, "Control of 2,4-D Resistant Weeds in Small Grains With Dowco 290 Herbicide," Down Earth 31(2):4-9 (1975).

<5444>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Thistle, Canada (CIRSIUM ARVENSE)
EXPERIMENTAL DOSE: 0.14 and 0.28 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Environmental chamber; photoperiod--16 hr; temperatures--25 C (day) and 21 C (night); RH--70%; 7 ecotypes of Canada thistle studied
EFFECTS: Destruction of root system with relatively small effects on leaves for most ecotypes
REFERENCE: Hunter, J.H. and L.W. Smith, "Environment and Herbicide Effects on Canada Thistle Ecotypes," Weed Sci. 20(2):163-166 (1972).

<5445>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Yaupon (ILEX VOMITORIA)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Postemergence spray; 93.5 l./ha; single annual application for each of two yr (1969-1970) with and withouth adjuvants
EXPERIMENTAL CONDITIONS: Field study; aqueous postemergence spray; X-77 surfactant at 0.5, 1.0, and 5.0% and DMSO at 1.0, 10.0, and 25% studied as adjuvants; time 1 and 2 yr
EFFECTS: Yaupon canopy reduction; picloram accumulation in grass and yaupon
COMMENTS: DMSO had no synergistic effect whereas X-77 did; earlier spraying resulted in better canopy reduction; retreatment resulted in considerably better canopy reduction depending on amount and type of adjuvant used
REFERENCE: Baur, J.R., R.W. Bovey, and J.D. Smith, "Effect of DMSO and Surfactant Combinations on Tissue Concentrations of Picloram," Weed Sci. 20(4):298-302 (1972).

<5446>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Mesquite, honey (PROSOPIS JULIFLORA); Mesquite, velvet (PROSOPIS JULIFLORA)
EXPERIMENTAL DOSE: 1000 ppmw; 20 microliter/leaf
APPLICATION METHODS: Applied as droplets to leaves; surfactant at 0.5% (v/v); DMSO was an experimental variable
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Severe contact injury and other phytotoxic effects observed on both mesquites; combined 2,4,5-T and pichloram produced about the same damage
COMMENTS: Formulation of herbicides in a DMSO-complex carrier enhanced activity considerably over that obtained with aqueous carrier, the degree of enhancement being greater with 2,4,5-T than with picloram
REFERENCE: Hull, H.H. and H.L. Morton, "Morphological Response of Two Mesquite Varieties to 2,4,5-T and Picloram," Weed Sci. 19(6):712-716 (1971).

<5447>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Sowthistle, perennial (SONCHUS ARVENSIS); Sowthistle, annual (SONCHUS OLERACEUS)
EXPERIMENTAL DOSE: 17.5 g/ha
APPLICATION METHODS: Applications broadcast over pots when plants were 10 to 15 cm tall using a pot sprayer delivering 54 l./ha at 2.46 kg/cm2 pressure
EXPERIMENTAL CONDITIONS: Greenhouse experiments; embryo culture assured survival of seedlings; observations made 30 days after herbicide treatments; treatments applied to perennial and annual sowthistle plants and to progeny (perennial x annual) backcrossed with parents
EFFECTS: Annual Sowthistle -- 79% recovery; perennial sowthistle -- 63% recovery; backcrosses to annual sowthistle -- 27-35% recovery; backcrosses to perennial sowthistle -- 15% recovery
COMMENTS: Similar response of annual and perennial sowthistle to picloram
REFERENCE: Alam, S., A.R. Bell, T.S. Hsieh, J.D. Nalewaja, and A.B. Schooler, "Herbicide Response of Interspecific Sowthistle Crosses," Weed Sci. 21(3):189-193(1973).

<5448>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Plants
EXPERIMENTAL DOSE: 2, 5, and 10 lb/A
APPLICATION METHODS: Hand broadcast (10% pellets)
EXPERIMENTAL CONDITIONS: Field study; old-field test sites
EFFECTS: Slight weed control at highest rate
COMMENTS: Total vegetation control of all species increased directly with increased rate of herbicide; most complete control occurred with bromacil, karbutilate, and picloram plus diuron.
REFERENCE: Shipman, R.D., "Soil-Applied Herbicides in the Control of Native Broadleaf Weeds and Grasses," Proc. Northeast. Weed Sci. Soc. 28:331-334 (1974).

<5449>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Bursage, wollyleaf (FRANSERIA TOMENTOSA)
EXPERIMENTAL DOSE: 1.1, 2.2, and 3.4 kg/ha
APPLICATION METHODS: Soil sterilant application with and without incorporation; postemergence sprays at varied stages of plant development; liquid sprays at 188 l/ha; pellets or granules broadcast by hand; potassium salt formulation and 2% pellet formulation
EXPERIMENTAL CONDITIONS: Field study; non-crop areas; time period--1962 to 1968; evaluation time--up to 3 yr; soil--clay loam
EFFECTS: Effective control as soil sterilant at 2.2 kg/ha of either formulation for at least 12 mos (and sometimes for up to 35 mos); slightly more effective in pellet form; essentially as effective in postemergence application at 1.7 kg/ha
COMMENTS: Fenac controlled woollyleaf bursage for 3 years in noncropped areas; effective control of woollyleaf bursage obtained when treated at bud stage or earlier with ester formulation of 2,4-D
REFERENCE: Smith, D.T., A.F. Wiese, and A.W. Cooley, "Woollyleaf Bursage Response to Selected Herbicides," Weed Sci. 20(6):554-556 (1972).

<5450>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: M-3140
PLANT: Hibiscus (HIBISCUS ROSA); Guava (PSIDIUM GUAJAVA); Sorghum (SORGHUM BICOLOR); Cotton (GOSSIPIUM ARBOREUM)
EXPERIMENTAL DOSE: 0.3 to 7,560 micro g/leaf
APPLICATION METHODS: Applied as droplets to leaves with micropipette
EXPERIMENTAL CONDITIONS: Field study (hibiscus and guava); greenhouse study (sorghum and cotton)
EFFECTS: Leaf kill at 1.2 to 1890 micro g/leaf with 7 days
COMMENTS: Pentachlorophenol and AP-20 produced most rapid desiccation at high dosages; usually as effective as PCP and AP-20 within 1 to 2 days after treatment, and produced more extensive desiccation at lower dosages, especially on hibiscus, sorghum, and cotton; diquat, paraquat, cacodylic acid, and AP-20 produced complete defloiation of hibiscus within 5 days after treatment but diquat and paraquat were more effective at lower dosages than other defoliants; diquat completely defoliated hibiscus regardless of placement on leaf, but higher dosages required for effective desiccation when applied non-uniformly over leaf
REFERENCE: Bovey, R.W. and F.R. Miller, "Desiccation and Defoliation of Plants by Different Herbicides and Mixtures," Agron. J. 60(1):700-702 (1968).

<5451>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(4 10(-4)M, 10(-5)M, 10(-6), and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control at 10(-4)M; moderate control at 10(-5)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<5452>
<5452>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: Greater than 8.4 to 5.4 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Severe inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and P. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5453>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in oat and cucumber but 50% or greater in sorghum at 1 ppm, 50% or greater inhibition in all plants at 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 ppm, 50% or greater in both at 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<5454>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Bentgrass, Rhode Island (AGROSTIS TENUIS); Bentgrass, creeping (AGROSTIS PALUSTRIS); Bluegrass, Kentucky (POA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Fescue, tall (FESTUCA ARUNDINACEA); Fescue, creeping red (FESTUCA RUBRA); Orchard grass (DACTYLIS GLOMERATA)
EXPERIMENTAL DOSE: 0.25, 0.50, 0.75, 1.0, 1.25, 1.5 and 2.0 lb/A
APPLICATION METHODS: Fall and spring postemergence applications in 40 gpa water
EXPERIMENTAL CONDITIONS: Commercial seed production fields; 12 experiments with randomized block design; plots--8 by 20 ft with 3 replications; fall treatments in October or November, spring treatments in March or April; seed yield samples harvested from 3.3 ft wide strip entire length of plot; seed from 10 of the 12 experiments tested for germination
EFFECTS: Seed production in bentgrass cultivars Penncross, Seaside and Highland similar to untreated check but Astoria cultivar showed significant seed reduction at 1.0 and 1.5 lb/A; germination when checked was normal in bentgrass except Penncross cultivar--greater than untreated check; fall treatments--Potomac orchard grass at 0.75 lb/A and above, Pennlawin red fescue at 1.0 lb/A and above and Highland bentgrass at 1.0 and 2.0 lb/A significantly different than untreated check; spring treatments--Potomac orchardgrass and Pennlawn red fescue at all rates, Newport bluegrass at 1.0, 1.5 and 2.0 lb/A and Highland bentgrass at 1.0 lb/A and above significantly different than untreated check; no significant difference in seed germination in fall or spring
COMMENTS: Most grass species showed temporary foliar injury--orchardgrass more pronounced; spring treatments seemed to be more phytotoxic
REFERENCE: Lee, W.O., "Effect of Picloram on Production and Quality of Seed in Several Grasses-M," Weed Sci. 18(1):171-173 (1970).

<5455>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bromegrass, smooth (BROMUS INERMIS); Orchard grass (DACTYLIS GLOMERATA); Wheatgrass, crested (AGROPYRON CRISTATUM); Fescue, creeping red (FESTUCA RUBRA)
EXPERIMENTAL DOSE: 0.6, 1.1, 1.7, 2.2, 2.8 and 3.4 kg/ha
APPLICATION METHODS: September and April applications; postemergence treatment in water at spray volume of 127 l./ha and pressure of 2.1 kg/cm(2)
EXPERIMENTAL CONDITIONS: Palouse silt loam; all grasses treated in seedling stage with 1.1 kg/ha bromoxynil to control broadleaf weeds; randomized block experimental design with 3 to 4 replications
EFFECTS: Bluegrass--significant grass control with September application at 1.1 kg/ha and above and with April application of 2.8 and 3.4 kg/ha; bromegrass--significant control at all rates in September and April; orchardgrass--significant control at 1.1 kg/ha and above in September, and at all rates with April application; wheatgrass--significant control at all rates with both September and April treatments; fescue--significant control with September applications at all rates and significant April control at all rates except 0.6 kg/ha
COMMENTS: Bluegrass seemed to be more tolerant than other grasses
REFERENCE: Canode, C.L., "Tolerance of Five Cool-Season Perennial Grasses to Selected Herbicides," Agron. J. 66:683-686 (1974).

<5456>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.01 ppm w
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Laboratory study; pot culture; temperature--25 to 32 C; light intensity--500 ft C; soil--Eufala fine sand
EFFECTS: Marginal leaf chlorosis
COMMENTS: CUCUMIS SATIVA developed marginal chlorosis with fluometuron, palmate veinal chlorotic pattern with prometryne,; auxin-type manifestations of meristematic tissues with picloram, and an interveinal chlorotic pattern with pyriclor
REFERENCE: Lynd, J.W., C. Rieck, D. Barnes, D. Murray, and P.W. Santelmann, "Indicator Plant Aberrations at Threshold Soil Herbicide Levels," J. Agron. 59(1):194-196 (1967).

<5457>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, alsike (TRIFOLIUM HYBRIDUM); Fescue, creeping red (FESTUCA RUBRA); Potato (SOLANUM TUBEROSUM); Tomato (LYCOPERSICON ESCULENTUM)
EXPERIMENTAL DOSE: 0.25, 25.4, 254, and 508 g/ha
APPLICATION METHODS: Solution applications; solution equivalent, 1 ppb, 100 ppb, 1 ppm and 2 ppm respectively
EXPERIMENTAL CONDITIONS: 15-cm clay pots containing 3:2:1 mixture of loam, peat, and sand; alfalfa, clover, and fescue--50 plants/pot, 25 wheat plants/pot and 5 tomato plants/pot; five weekly doses of 100 ml to each pot, 4 treatments replicated 3 times; 8 weeks in growth chamber--photoperiod of 16 hours, relative humidity 35-80%, day temperature 24 degrees C, night temperature 20 degrees C; germination counts made 1, 2 and 3 wk after planting, other observations made weekly
EFFECTS: Significant reduction in germination of clover and alfalfa at 1 and 2 ppm; plant height of all but potato reduced, potato was etiolated; alfalfa--100 ppb gave leaf injury, elongated petioles, folded cotyledons; clover--100 ppb gave leaf injury, elongated petioles, stalk swelling; fescue--1 ppm caused tillering and some basal weakness; wheat--1 and 2 ppm caused tillering and basal weakness; tomato--100 ppb caused leaf deformation, 1 ppm gave severe stunting; potato--stunting, reduction in leaf size
COMMENTS: Fescue was most tolerant of all plants; wheat also tolerant but reduction in growth at 1 and 2 ppm
REFERENCE: Flater, R.L., W. Yarish, and H. Vaartnou, "Effects of Picloram on Germination and Development of Six Crop Species," Can. J. Plant Sci. 54(1):219-221 (1974).

<5458>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Acacia (ACACIA FLAVENSCENS); Guineagrass (PANICUM MAXIMUM)
EXPERIMENTAL DOSE: 0.56 and 1.12 kg/ha
APPLICATION METHODS: Postemergence spray; 96-152 l./ha; 1.4 kg/sq cm; 0.04% non-ionic wetting agent
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate control of ACACIA but severe damage to stylo ground cover
COMMENTS: 2,4-D no effective on ACACIA seedlings; addition of 2,4-D to 2,4,5-T gave no better control; pichloram no better than 2,4,5-T; significant damage to stylo by all herbicides evaluated
REFERENCE: Bailey, D.P., "Control of ACACIA FLAVESCENS with Herbicides," Aust. J. Exp. Agric. Anim. Husb. 12(5):441-446 (1972).

<5459>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 0.025 to 0.2 ppm
APPLICATION METHODS: Nutrient solution addition
EXPERIMENTAL CONDITIONS: Environmental chamber; nutrient solution (glass jar) culture; photoperiod--16 hr; light intensity--1800 ft candles; temperature--22 to 24 C (day) and 9-11 C (night); evaluation time--6 days
EFFECTS: 50% growth reduction of shoot fresh weight at 0.03 ppm
COMMENTS: Pichloram more phytotoxic to sunflower than three pichloram derivatives evaluated
REFERENCE: Grover, R., J.R. Gear, and R. Zerr, "Relative Phytotoxicity of Some Pichloram Derivatives," Bull. Environ. Contam. Toxicol. 14(1):721-725 (1975).

<5460>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 4.2X10(-3) M or 400 ppmw
APPLICATION METHODS: 50 ug/plant placed on one unifoliate leaf; one g/l. Tween-20; C(14) labelled; potassium salts
EXPERIMENTAL CONDITIONS: Seed germinated in 50:0 sand:Perl-loam; seedlings transferred to nutrient solution culture (Hoagland's) contained in plastic bags; evaluation time--every 6 hr for first 24 hr then daily; excised leaves also studied; greenhouse study
EFFECTS: Moderate reduction in plant fresh weight and slight reduction in dry weight; leaf injury and death
COMMENTS: Greatest accumulation of picloram occurred in growing point, stem, and auxillary buds; transport from treated leaf occurred within 6 hr and continued for at least 7 days; effectiveness of herbicide combinations containing picloram related to the particular plant part measured
REFERENCE: Hamill, A.S., L.W. Smith, and C.M. Switzer, "Influence of Phenoxy Herbicides on Pichloram Uptake and Phytotoxicity," Weed Sci. 20(3):226-229 (1972).

<5461>
<5461>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Beet, sugar (BETA VULGARIS); Parsnip (PASTINACA SATIVA); Carrot (DAUCUS CAROTA); Potato (SOLANUM TUBEROSUM); Rutabaga (BRASSICA NAPOBRASSICA); Corn (ZEA MAYS); Bean, kidney (PHASEOLUS VULGARIS); Oat (AVENA SATIVA); Swiss chard (BETA VULGARIS)
EXPERIMENTAL DOSE: 4.48 kg/ha (2 ppm)
APPLICATION METHODS: Preplanting incorporated to 15-cm depth; potassium salt of picloram (Tordon 22K)
EXPERIMENTAL CONDITIONS: Field studies--somerset sandy loam, 5 by 7-m plots, June 10, 1968 application, crops planted mid-June 1969, 1000 kg/ha 6-12-12 fertilizer in 1968 an d1000 kg/ha 6-16-8 in 1970 and 1971; greenhouse studies--soil collected from field November 1968 and on May 1, 1971 (145 and 1,055 days, respectively, after Picloram treatment), residual activity of picloram determined
EFFECTS: Picloram detected at 1.86, 1.78, 1.32, 0.70, 0.28, 0.12 and 0.02 ppm at 18, 63, 145, 337, 504, 690, and 843 days after treatment, respectively; carrots, parsnips, potatoes, rutabagas, and beets didn't germinate in greenhouse when grown in field treated soil collected 145 days after treatment (1.32 ppm residual picloram); 0.70 ppm soil collected 1 year after treatment--corn and oat growth reduced 20% and beans, parsnips, and Swiss chard did not grow
COMMENTS: Studies indicate corn and oats grown safely 1 to 2 years after picloram treatment; beets, carrots, potatoes, turnips, beans, Swiss chard, and parsnips safely grown 4 to 5 years after picloram treatment
REFERENCE: Ragab, M.T.H., "Residues of Picloram in Soil and Their Effects on Crops," Can. J. Soil Sci. 55:55-59 (1975).

<5462>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Oak, post (QUERCUS STELLATA); Oak, blackjack (QUERCUS MARILANDICA); Hickory, mockernut (CARYA TOMENTOSA); Huckleberry (GAYLUSSACIA BACCATA); Beautyberry, American (CALLICARPA AMERICANA); Sassafras (SASSAFRAS ALBIDUM)
EXPERIMENTAL DOSE: 5.6 and 11.2 kg/ha
APPLICATION METHODS: 3 patterns of application--(1) in 14 bands each 30 cm wide and 20 m long spaced 1.2 m apart, edge to edge; (2) in 14 spots 30 cm diameter and at 1.2 m intervals, edge to edge, on each of 14 lines 20 m long; and (3) broadcast uniformly over plot; formulation--10% concentration in pellets
EXPERIMENTAL CONDITIONS: Ruston sandy loam; 12 treatments replicated three times in randomized complete block designs; 20 m square plots 7.6 m apart; sufficient rainfall for adequate herbicide leaching; woody plants along 1.5 m transect of each plot observed for crown reduction after 2 growing seasons
EFFECTS: Postoak--unsatisfactory crown reduction; blackjack oak--unsatisfactory crown reduction except with broadcast application (marginal reduction at 5.6 kg/ha, satisfactory reduction at 11.2 kg/ha); hickory--satisfactory crown reduction except 5.6 kg/ha spot application (unsatisfactory reduction); huckleberry--satisfactory crown reduction except 5.6 kg/ha spot application (unsatisfactory reduction); beautyberry--same as huckleberry; sassafras--satisfactory (100%) crown reduction
COMMENTS: 91 to 100% crown reduction satisfactory, 85 to 90% reduction marginal, and under 85% unsatisfactory; oaks and hickory are overstory species, other plants are understory species; bromacil superior to picloram for oak crown reduction, reverse is true for understory species
REFERENCE: Peevy, F.A., "Bromacil and Picloram Under Southern Upland Hardwoods," Weed Sci. 21(1):54-56 (1973).

<5463>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Mesquite, honey (PROSOPIS JULIFLORA); Oak, live (QUERCUS VIRGINIANA); Rose, Macartney (ROSA BRACTEATA); Huisache (ACACIA FARNESIANA); Whitebrush (ALOYSIA LYCIOIDES); Oak, post (QUERCUS STELLATA); Yaupon (ILEX VOMITORIA); Oak, blackjack (QUERCUS MARILANDICA); Elm, winged (ULMUS ALATA)
EXPERIMENTAL DOSE: 0.56, 2.24, and 4.48 kg/ha
APPLICATION METHODS: Postemergence sprays for brush control; granular herbicides spread by hand broadcasting, liquid herbicides sprayed at volume of 187 l./ha in acetone or water; polymerized herbicides sprayed in acetone (spring) and water (fall)
EXPERIMENTAL CONDITIONS: Field study; native stand and nursery grown brush plants; three replicates per treatment; randomized block experimental design
EFFECTS: Effective control of huisache and winged elm with slight to moderate control of remaining test species
COMMENTS: Generally no significant differences in effectiveness between conventional and polymerized herbicides on honey mesquite
REFERENCE: Bovey, R.W., R.E. Meyer, R.D. Baker, and J.R. Baur, "Polymerized Herbicides for Brush Control," Weed Sci. 20(4):332-335 (1972).

<5464>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-, compd. with 1,1',1"-nitrilotris[2-propanol] (1:1), mixt. with 1,1',1"-nitrolotris[2-propanol] (2,4-dichlorophenoxy)acetate (salt)
CHEMICAL COMMON NAME: Tordon 101
PLANT: Maple, red (ACER RUBRUM);Oak, red (QUERCUS RUBRA);Pine (PINUS sp.);Birch (BETULA sp.);Gum, sweet (LIQUIDAMBAR STYRACIFLUA);Blackberry (RUBUS sp.);Privet (LIGUSTRUM sp.);Dogwood (CORNUS sp.)
EXPERIMENTAL DOSE: 2 gal/A
APPLICATION METHODS: Postemergence application; fuel oil carrier, Microfoil boom; 12-48 gal/A oil, 35 psi
EXPERIMENTAL CONDITIONS: Field study; dormant season
EFFECTS: Effective eradication of pine, red maple, birch, sweet gum, blackberry, and dogwood; slight eradication of red oak and privet
COMMENTS: On basis of effectiveness, several combined mixes of herbicides appear about as effective as 2,4,5-T in brush eradication despite considerable variation in effects
REFERENCE: Chappell, W.E., "Herbicidal Mixtures for the Control of Mixed Brush in Right-of-Way," Proc. South. Weed Sci. Soc. 26:306-309 (1973).

<5465>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-, methyl ester
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: Greater than 8.4 to 5.4 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Severe inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5466>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 4-amino-3,5,6-trichloro-, mixt. with (2,4,5-trichlorophenoxy)acetic acid
CHEMICAL COMMON NAME: Tordon 155
PLANT: Plants
EXPERIMENTAL DOSE: 1.0 gal/ 12.0 gal/A; 1.0 gal/24.0 gal/A; 1.0 gal/48.0 gal/A
APPLICATION METHODS: Postemergence application; fuel oil carrier, Microfoil boom; 12-48 gal/A oil; 35 psi
EXPERIMENTAL CONDITIONS: Field study; dormant season
EFFECTS: Slight to effective control of brush; greatest volume used 48 gal/A was most effective
COMMENTS: On basis of effectiveness, several combined mixes of herbicides appear about as effective as 2,4,5-T in brush eradication despite considerable variation in effects
REFERENCE: Chappell, W.E., "Herbicidal Mixtures for the Control of Mixed Brush in Right-of-Way," Proc. South. Weed Sci. Soc. 26:306-309 (1973).

<5467>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 5-amino-6-(7-amino-5,8-dihydro-6-methoxy-5,8-dioxo-2-quinolinyl)-4-(2-hydroxy-3,4-dimethoxyphenyl)-3-methyl-
CHEMICAL COMMON NAME: Streptonigrin
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 7.5x10(-6) and 1.5x10(-5) M
APPLICATION METHODS: Immersion in assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; broad bean main and lateral roots studied by autoradiography; Fuelgen squash procedure
EFFECTS: Chromosome aberrations and inhibition of nucleic acid synthesis
COMMENTS: SN, TMU, and EOC induced chromatid aberrations during post-DNA-synthesis or G(2) phase; during period of DNA synthesis (S phase), chromatid aberrations produced by SN and EOC; streptonigrin at least as effective during S as during G(2); effect produced by EOC during S phase considerably weaker than that produced in G(2) cells and consisted mainly of isolocus breaks localized in nucleolar constriction
REFERENCE: Kihlman, B.A. and G. Odmark, "Deoxyribonucleic Acid Synthesis and the Production of Chromosomal Aberrations by Streptonigrin, 8-Ethoxycaffeine and 1,3,7,9-Tetramethyluric Acid," Mut. Res. 2:494-505 (1965).

<5468>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 6-chloro-
PLANT: Corn (ZEA MAYS); Sorghum, grain (SORGHUM BICOLOR); Wheat (TRITICUM AESTIVUM); Rice (ORYZA SATIVA); Beet, sugar (BETA VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Alfalfa (MEDICAGO SATIVA); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 1.0 to 500 ppmw
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--14, 21, and 24 da
EFFECTS: Reduced growth of all species at 5 to 290 ppmw
COMMENTS: Nitrapyrin more phytotoxic to graminaceous species tested than its metabolite; 6-chloropicolinic acid more toxic than nitrapyrin to dicotyledonous species; dicotyledonous plants more sensitive to both compounds than grasses
REFERENCE: Geronimo, J., L. L. Smith, G. D. Stockdale, and C. A. I. Goring, "Laboratory Studies on the Phytotoxicity of Nitrapyrin and Its Principal Metabolite 6-Chloropicolinic Acid," Down Earth 29(3):25-28 (1973).

<5469>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 6-chloro-
CHEMICAL COMMON NAME: Chloropicolinic acid
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 7.2 to 2.2 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Severe inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5470>
<5470>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 6-chloro-
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM BICOLOR); Wheat (TRITICUM AESTIVUM); Rice (ORYZA SATIVA); Beet, sugar (BETA VULGARIS); Tomato (LYCOPERSICON ESCULENTUM); Alfalfa (MEDICAGO SATIVA); Alfalfa (MEDICAGO SATIVA); Soybean (GLYCINE MAX); Cotton (GOSSYPIUM HIRSUTUM)
EXPERIMENTAL DOSE: 5-500 ppmw
APPLICATION METHODS: Added to soil; mixed by roller mill
EXPERIMENTAL CONDITIONS: Greenhouse study; varied soil types--sand, loam, and clay; temperatures--26.7 to 32.2 C (day) and 13.3 to 21.1 C (night); evaluation time--14 to 24 days; pot (can) culture
EFFECTS: Significant reduction in fresh weight of all test plants at 10-50 ppmw except sorghum and corn which required 100 ppmw
COMMENTS: Nitrapyrin more toxic than 6-chloropicolinic acid to graminaceous species; 6-chloropicolinic acid more toxic than nitrapyrin to the dicotyledenous species; dicotyledenous species more sensitive to both compounds than graminaceous species
REFERENCE: Geronimo, N., L.L. Smith, G.D. Stockdale, and C.A. I. Goring, "Comparative Phytotoxicity of Nitrapyrin and Its Principal Metabolite, 6-Chloropicolinic Acid," Agron. J. 65:689-692 (1973).

<5471>
CHEMICAL NAME: 2-Pyridinecarboxylic acid, 6-chloro-
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 20, 50, 100, 200, 500, 1000, 2000, and 5000 ppmw
APPLICATION METHODS: Formulated in water as sodium salt by adding few drops of 1N NaOH and titrating to pH 7.5 with 0.1N HCl; 20, 50, and 100 ppmw tested on cotton, 100 ppmw and above tested on wheat
EXPERIMENTAL CONDITIONS: Chemical thoroughly mixed with sandy soil; band of treated soil then placed in cans either above or below seeds--150 g of treated soil; soil in cans brought to field water capacity (10%); 2.54 cm thick styrene-divinyl benzene 8% copolymer beads added to soil surface to minimize evaporation; cans transferred to greenhouse; randomized block design with 4 replicates; growht determined
EFFECTS: Cotton fresh weight significantly decreases with increasing concentration when treatment applied below seeds (root exposure), fresh weight shows no significant change when treatment applied above seeds (shoot exposure); wheat fresh weight significantly decreased at all rates above 100 ppmw from root exposure, no significant decrease from shoot exposure
COMMENTS: Exposure to wheat and cotton roots more important than shoot exposure for inhibiting top growth
REFERENCE: Geronimo, J., L.L. Smith, Jr., and G.D. Stockdale, "Effect of Site Exposure to Nitrapyrin and 6-Chloropicolinic Acid on Growth of Cotton and Wheat Seedlings," Agron. J. 65:692-693 (1973).

<5472>
CHEMICAL NAME: 2-Pyrrolidinone, 1-(3,4-dichlorophenyl)-3-methyl
CHEMICAL COMMON NAME: BV-201
PLANT: Couchgrass (AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3), and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Moderate control of shoot emergence at 10(-3)M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<5473>
CHEMICAL NAME: 2-Pyrrolidinone, 1-ethenyl-, homopolymer
CHEMICAL COMMON NAME: Peregal ST
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1%
APPLICATION METHODS: Immersion of roots (intact germinating seedlings)
EXPERIMENTAL CONDITIONS: Laboratory study; Hoagland's nutrient solution culture; exposure period--4 hr; samples taken during treatment and up to 24 hr after
EFFECTS: No adverse effect
COMMENTS: Mitosis inhibited by 16 surfactants at 0.1%; ionogenic types appeared unimportant; two surfactants caused slight depression of mitotic index; remaining four had no recognizable effect
REFERENCE: Nethery, A.A., "Inhibition of Mitosis by Surfactants," Cytologia 32:321-327 (1967).

<5474>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Bean, snap (PHASEOLUS VULGARIS); Bean, kidney (PHASEOLUS VULGARIS); Galinsoga (GALINSOGA CILIATA)
EXPERIMENTAL DOSE: 0.5, 1.0, and 1.5 kg/ha
APPLICATION METHODS: Sprays--preplanting preemergence, cracking, early postemergence and late postemergence selectively applied as recommended; 460 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--eel silt loam; 10 or 30 sq m plots; rain--moderate, light showers every 3 to 5 days
EFFECTS: Of several application times, bentazon gave best weed control with little crop effects at 0.5 and 1.0 kg/ha in late postemergence application
COMMENTS: Of twenty-one herbicides evaluated, three newer materials performed well; USB 3584, preplant incorporated, gave good control of pigweed and lambs-quarters; preemergence treatments of metribuzin gave excellent control of redroot pigweed and galinsoga with little crop injury; fluorodifen gave good control, however, leaf symptoms were noted early in the season; all were applied at recommended rates, alone and in combination
REFERENCE: Boldt, P.F. and R.D. Sweet, "Evaluation of Herbicides on Dry and Snap Beans," Proc. Northeast. Weed Sci. Soc. 28:155-160 (1974).

<5475>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Pigweed (AMARANTHUS sp.); Lamb's-quarters (CHENOPODIUM ALBUM); Soybean (GLYCINE MAX); Mustard, wild (BRASSICA KABER); Velvetleaf (ABUTILON THEOPHRASTI); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Cocklebur, common (XANTHIUM PENSYLVANICUM); Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 0.84-3.36 kg/ha
APPLICATION METHODS: Postemergence spray; surfactant formulation; aqueous carrier (159 or 187 l. /ha) ; 80% WP formulation
EXPERIMENTAL CONDITIONS: Field studies; cultivated weed and soybean plots; natural weed plots; time--3-5 wk
EFFECTS: Effective control of most broadleaf weeds at 0.84 kg/ha application rate with little or no effect on soybean yield; WP and surfactant formulations as well as Na salt results essentially same
COMMENTS: Rainfall reduced weed control; pre-planting application of trifluralin to soil for control of grass weeds; bentazon effectiveness influenced by growth stage of weed species
REFERENCE: Anderson, R.N., W.E. Lueschen, D.D. Warnes, and W.W. Nelson, "Controlling Broadleaf Weeds in Soybeans with Bentazon in Minnesota," Weed Sci. 22(2):136-142 (1974).

<5476>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Turnip (BRASSICA RAPA)
EXPERIMENTAL DOSE: 1.12 to 1.76 kg/ha
APPLICATION METHODS: Addition to soil; laboratory sprayer; 413 l./ha at 2.11 kg/sq cm
EXPERIMENTAL CONDITIONS: Greenhouse study; soils-- Bledington and Boddington Barn; pot culture; temperature--13 to 23 C; pH--6.3 or 6.9 or 7.3
EFFECTS: Growth reduction of turnip with no difference resulting from liming
COMMENTS: Metoxuron, fenuron, metribuzin, and fluometuron more active in Boddington Barn soil than in Bledington soil; prometryne similar in effect in both soils
REFERENCE: Richardson, W.G. and J.D. Banting, "The Phytotoxicity of Various Herbicides in Two Sandy Loam Soils and the Effect of Liming," Weed Res. 17(3):203-207 (1977).

<5477>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1 and 2 lb/A
APPLICATION METHODS: Formulation--WP and liquid; spray application at rate of 50 gpa; late spring and early and midsummer treatments
EXPERIMENTAL CONDITIONS: Treatments to bluegrass sod and to plots of only nutsedge; 4 x 5 ft plots with 3 replications
EFFECTS: Late spring--poor to moderate nutsedge control, minor turfgrass injury; early summer--excellent nutsedge control, minor turfgrass injury; midsummer--excellent nutsedge control, little or no turfgrass injury; WP and liquid formulations equally effective
COMMENTS: Nutsedge control easier as season progresses; nutsedge easier to control on turfgrass than on bare soil; 1-inch rainfall after second spring application may have reduced effectiveness
REFERENCE: Jagschitz, J.A., "Postemergence Crabgrass and Nutsedge Control in Turfgrass with Herbicides," Proc. Northeast. Weed Sci. Soc. 29:376-381 (1975).

<5478>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazone
PLANT: Cocklebur, common (XANTHIUM PENSYLVANICUM); Jimsomweed (DATURA STRAMONIUM); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.5, 2.0, and 3.0 pt/A
APPLICATION METHODS: Postemergence spray; 10 or 25 gal/A at 60 or 30 psi; used in combination with alachlor at 2.0 qt/A for grass control
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of both weeds with no adverse effect on soybean yield
COMMENTS: Any of four herbicides tested provided excellent control and result in favorable net return if used early in cropping season; later applications, although better than no treatments, resulted in considerably lower net return
REFERENCE: Coble, H. D., "Optimizing Broadleaf Weed Control in Soybeans With Postemergence Herbicide," Down Earth 32(4):12-15 (1977).

<5479>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence spray; 15 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective control of nutsedge; more effective when applied early and late (split application)
COMMENTS: Cyperquat and bentazon in postemergence application most effective herbicides, and CGA-24705 and U-44344 in preplant incorporated application most effective; perfluidone most effective preemergence application
REFERENCE: Kurtz, W.L. and E.W. Stroube, "Control of Yellow Nutsedge by Various Herbicides," Proc. N. Cent. Weed Contr. Conf. 30:59 (1975).

<5480>
<5480>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: BAS-3512-H
PLANT: Cocklebur, common (XANTHIUM PENSYLVANICUM); Mustard, wild (BRASSICA KABER); Smartweed, common (POLYGONUM HYDROPIPER); Plants; Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.75, 1.0, and 2.0 lb/A
APPLICATION METHODS: Postemergence spray; 40 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; 3 locations (MN, MI, and IA)
EFFECTS: Effective control of most broadleaf weeds with no adverse effect on soybean yield
COMMENTS: Spraying when majority of weeds have emerged of utmost importance since BAS 3512 mainly contact herbicide; as weed growth advanced susceptibility decreased; kill of some species not complete or a higher rate or possibly a split application of 1 lb/A at two weed stages required as stage of growth advances or as new germination occurs
REFERENCE: Weishar, A.L., C.W. Carter, and M.A. Veenstra, "BAS 3512-H, a New Postemergent Broadleaf Herbicide for Soybeans," Proc. N. Cent. Weed Contr. Conf. 26:50 (1971).

<5481>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Dayflower, common (COMMELINA COMMUNIS)
EXPERIMENTAL DOSE: 0.28-1.68 kg/ha
APPLICATION METHODS: Postemergence spray; 2.0 m swath; 0.5% X-77 surfactant
EXPERIMENTAL CONDITIONS: Field study; soil--heavy clay; evaluation time--2 or 6 wk
EFFECTS: Slight damage to soybean with effective control of dayflower at all application rates
COMMENTS: As postemergence treatments, bentazon plus surfactant applied topically and linuron plus surfactant or metribuzin plus surfactant directed gave good to excellent control of dayflower, hemp sesbania was controlled by treatments containing linuron, metribuzin or prometryne, all plus surfactant and directed; mexicanweed was controlled by directed applications of treatments containing linuron, metribuzin, prometryne or 2,4-DB, all plus surfactant; good control of morningglory was obtained with directed applications of treatments containing 2,4-DB, dinoseb + naptalam plus surfactant, or prometryne plus surfactant
REFERENCE: Eastin, E.F., "Control of Problem Weeds in Texas Soybeans," Proc. South. Weed Sci. Soc. 26:67-73 (1973).

<5482>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: BAS-3512-H
PLANT: Cucumber (CUCUMIS SATIVUS); Squash, summer (CUCURBITA PEPO); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A, 3% EC
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7
EFFECTS: No effect on crabgrass but effective control of other weeds and no adverse effect on cucumber
COMMENTS: Control of crabgrass, pigweed, ragweed and lambsquarters in seeded cucumbers and squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence, and preemergence applications of chloramben methyl ester alone; in cucumbers only, bensulide preplant incorporatd + chloramben methyl ester preemergence, bensulide preplant incorporated + dinoseb preemergence over activated charcoal, and nitralin preemergence gave excellent full-season weed control
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<5483>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Chamise (ADENOSTOMA FASCICULATUM); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 0.5
APPLICATION METHODS: Postemergence; back pack air pressurized sprayer at 17 psi and 15 gpa; 80% WP formulation
EXPERIMENTAL CONDITIONS: 2 Texas locations; Katy fine sandy loam and Lake Charles clay; areas layed off 10 by 90 ft and 10 by 20 ft respectively; 10 by 90 ft area divided into 4 blocks, 2 treated and 2 untreated areas randomized
EFFECTS: Spreading dayflower controlled in both seedling and flowering stage; no rice injury
REFERENCE: Palmer, R.D., "Rice Weed Control in the Texas Western Belt," Proc. South. Weed Sci. Soc. 26:146-154 (1973).

<5484>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Grasses; Broadleaf weeds; Nutsedge, purple (CYPERUS ROTUNDUS); Rice (LEERSIA ORYZOIDES)
EXPERIMENTAL DOSE: 2 kg/ha
APPLICATION METHODS: Formulation--4 lb/gal; applied 7 days after crop emergence; dry season application only
EXPERIMENTAL CONDITIONS: Clay loam (pH 5.8, organic matter 2.6%); dry and wet season treatments; randomized block design with 3 replications; 3 by 5 sq. m plots; nitrogen applied as ammonium sulphate at rate of 120 kg/ha
EFFECTS: No rice toxicity; poor grass and broadleaf weed control, fair nutsedge control
COMMENTS: Herbicide combinaticns also tested
REFERENCE: Okafor, L.I. and S.K. De Datta, "Chemical Control of Perennial Nutsedge (CYPERUS ROTUNDUS) in Tropical Upland Rice," Weed. Res. 16(1):1-5 (1976).

<5485>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Spurge, spotted (EUPHORBIA MACULATA); Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 2 lb/A
APPLICATION METHODS: Postemergence spray; June application
EXPERIMENTAL CONDITIONS: Golf course green; randomized complete block designs with 4 replications; turf appearance, turf density, and weed control assessed; untreated check as control
EFFECTS: No injury to turf but no weed control
COMMENTS: Herbicide combinations also tested
REFERENCE: Johnson, B.J., "Spotted-Spurge Control in Bermudagrass Golf Greens with Herbicides: A Preliminary Report," Ga. Agric. Res. 18(2):24-25 (1976).

<5486>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: BAS-3512-H
PLANT: Cucumber (CUCUMIS SATIVUS); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Preplant incorporated (3 in. depth) and preemergence; postemergence application of BAS-3512 H only
EXPERIMENTAL CONDITIONS: Field study; soil--Woodbridge fine sandy loam; pH-6.7; time period--1972
EFFECTS: Effective control at 2.0 lb/A of all weeds except crabgrass with no apparent adverse effect on cucumber
COMMENTS: Effective control of large crabgrass, redroot pigweed, common ragweed and lambsquarters in seeded cucumbers and summer squash obtained with Amchem 70-25 preplant incorporated + chloramben methyl ester preemergence and preemergence applications of chloramben methyl ester alone
REFERENCE: Ashley, R.A., "Evaluation of Herbicides and Herbicide Combinations for Weed Control in Seeded Cucumbers and Summer Squash," Proc. Northeast. Weed Sci. Soc. 27:226-231 (1973).

<5487>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS); Bermudagrass, Tifton (CYNODON sp.); Bermudagrass, common (CYNODON DACTYLON); Zoysiagrass (ZOYSIA JAPONICAA); Centipede grass (EREMOCHLOA OPHIUROIDES); St. Augustine's grass (STENOTAPHRUM SECUNDUN)
EXPERIMENTAL DOSE: 2.2 and 4.4 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l/ha; one or two applications
EXPERIMENTAL CONDITIONS: Field study, soils--Cecil sandy loam, Cecil sandy clay loam, and Appling sand clay loam; greenhouse study; turfgrasses grown in 3.7 l pots
EFFECTS: Effective nutsedge control at both rates in spring applications but only slight to moderate control in summer applications; minor injury to turfgrasses but recovery within 8 wk
COMMENTS: Purple nutsedge control during initial year of treatment was 98 to 100% when bentazon applied in late spring, but control only 28 to 68% when applied in mid or late summer; perfluidone controlled 76 to 87% of purple nutsedge when applied in late spring and 95 to 100% when applied in late summer; bentazon treatments generally did not cause turf injury; in the field, perfluidone treatments injured St. Augustinegrass, zoysia grass, centipedegrass, and common bermudagrass
REFERENCE: Johnson, B.J., "Purple Nutsedge Control with Bentazon and Perfluidone in Turfgrasses," Weed Sci. 23(5):349-353 (1975).

<5488>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Cocklebur, Pennsylvanian (XANTHIUM PENSYLVANICUM)
EXPERIMENTAL DOSE: 1 kg/ha
APPLICATION METHODS: Postemergence; foliar, stem and petiole, vascular, and root applications of 4 to 24 day old plants
EXPERIMENTAL CONDITIONS: Growth chamber grown plants; 15-cm diameter pots containing 2:1 v/v mixture of peat moss and sand; watered with Hoagland's solution; 14-hr photoperiod at 35 klux mixed fluorescent and incandescent light, 70% relative humidity, and 32/21 C day/night temperatures
EFFECTS: Application anywhere on plant slowed or stopped photosynthesis in leaves acropetal to point of application; stem, petiole or root contact contributed to phytotoxicity of bentazon
COMMENTS: Application rate comparable to field treatments
REFERENCE: Potter, J.R., "Monitoring Photosynthesis to Measure Translocation of Bentazon in Common Cocklebur," Weed Sci. 25(3):241-246 (1977).

<5489>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Jimsonweed (DATURA STRAMONIUM); Soybean (GLYCINE MAX); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Velvetleaf (ABUTILON THEOPHRASTI); Morningglory, tall (IPOMOEA PURPUREA); Morningglory, ivyleaf (IPOMOEA HEDERACEA)
EXPERIMENTAL DOSE: 0.75 and 1.5 lb/A
APPLICATION METHODS: Postemergence at 30 gpa
EXPERIMENTAL CONDITIONS: Field studies; Mattapex silt loam; 10 by 20 ft plots, 4 rows of soybeans, 4 replications; 3 stage postemergence treatments--(1) unifoliate soybean leaves, jimonseed 2 to 3 inches high, (2) two and three trifoliate soybean leaves, 5 to 6-inch high jimonseed, (3) five to six soybean leaves, 11 to 13-inch high jimsonweed; spring planting; 3 year study
EFFECTS: Postemergence treatment I--0.75 lb/A gave 92% pigweed and 70% jimsonweed control and slight soybean necrosis, 1.5 lb/A gave 88% pigweed, 96% jimsonweed and 99% velvetleaf control with possible minor injury to soybean; post II--effective control of all weeds at both rates except velvetleaf at 0.75 lb/A (25%

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control); post III--effective pigweed and jimsonweed control; minor soybean vigor reduction and necrosis at most treatments; no control of morningglory
COMMENTS: Combinations of herbicides also tested
REFERENCE: Parochetti, J.V., "Control of Jimsonweed and Three Broadleaved Weeds in Soybeans with Herbicides," Proc. Northeast. Weed Sci. 29:19-25 (1975).

<5490>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Junglerice (ECHINOCHLOA COLONUM); Spangletop, bearded, (LEPTOCHLOA FASCICULARIS); Nutsedge, yellow (CYPERUS ESCULENTUS); Rice (ORYZA SATIVA); Dayflower, spreading (COMMELINA DIFFUSA); Ammannia, purple (AMMANNIA COCCINEA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Flatsedge, rice field (CYPERUS IRIA); Arrowhead (SAGGITARIA sp.)
EXPERIMENTAL DOSE: 0.56 and 1.12 kg/ha
APPLICATION METHODS: Postemergence spray; 9.8 l./ha at 1.23 kg/sq cm
EXPERIMENTAL CONDITIONS: Field study; 4 locations in Texas; rice field flooding (when applicable) after treatment; soil--Edna clay loam, Edna sandy loam, and Katy sandy loam
EFFECTS: At 1.12 kg/ha, moderate to effective control of all weeds except junglerice, signalgrass, and barnyardgrass with no adverse effect on rice
COMMENTS: IMC 3950 either preemergence or early post as a tank mixture with propanil controlled bearded sprangletop and junglerice; chlorpropham plus propanil showed promise for control of bearded sprangletop; oxadiazon and bifenox controlled bearded sprangletop as preemergence treatments; bifenox plus oxadiazon appeared to be best tank mix for control of several species
REFERENCE: Palmer, R.D. and C.W. Helpert, "Rice Weed Control in the Western Belt of Texas," Proc. S. Weed Sci. Soc. 27:127-135 (1974).

<5491>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Strawberry (FRAGARIA sp.)
EXPERIMENTAL DOSE: 2 and 4 kg/ha
APPLICATION METHODS: Postemergence spray at a volume rate of 352 l./ha and pressure of 2.1 kg/cm (2); 50% WP formulation
EXPERIMENTAL CONDITIONS: Greenhouse study; plants watered from above before spraying and from below after spraying; 2 replications; visual assessments at intervals, dry weights determined 8 weeks after spraying
EFFECTS: Marginal and interveinal necrosis of older leaves within 2 weeks after spraying; normal regrowth; significant reduction in dry weight compared with control
REFERENCE: Clay, D.V., "The Response of Strawberry to a Range of Foliage Acting Herbicides," Proc. Brit. Weed Control Conf. 11:409-416 (1972).

<5492>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Crabgrass (DIGITARIA TIMORENSIS); Crabgrass (DIGITARIA HORIZONTALIS); (AGERATUM CONYZOIDES); Foxtail, bristly (SETARIA PALLIDE-FUSCA); Nightshade, black (SOLANUM NIGRUM); Nutsedge, purple (CYPERUS ROTUNDUS); Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 1.34 to 5.38 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field studies; October trial; weed assessment in cane fields 105 days after spraying
EFFECTS: Weed control--51.9 to 67.3%, best control in range of 3.06 to 4.09 kg/ha; some growth reduction of cane, especially at higher doses
COMMENTS: Weed results tabulated together; further testing warrented; code name BAS 3510
REFERENCE: McIntyre, G., "Weed Control 1. Evaluation of New Herbicides," Mauritius Sugar Ind. Res. Inst., Annu. Rep. 18:117-119 (1970).

<5493>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Corn (ZEA MAYS); Nutsedge, purple (CYPERUS ROTUNDUS); (PHYLLANTHUS AMARUS); Purslane, common (PORTULACA OLERACEA); Spurge (EUPHORBIA sp.); (PANICUM ZIZANOIDES); Morningglory (IPOMOEA sp.); Bermudagrass, common (CYNODON DACTYLON); (KALLSTROEMIA MAXIMA); (SORGHUM VERTICILLIFLORUM)
EXPERIMENTAL DOSE: 3 kg/ha
APPLICATION METHODS: Postemergence treatment
EXPERIMENTAL CONDITIONS: Clay loam soil; field tests
EFFECTS: 60% maize yield compared to clean-weeded control; poor weed control
COMMENTS: Effects on specific weeds not reported
REFERENCE: Hammerton, J.L., "Weed Control Work in Progress at the University of the West Indies," Pest Artic. News Summ. 20(4):429-436 (1974).

<5494>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazone
PLANT: Plants; Lotus (LOTUS PEDUNCULATUS)
EXPERIMENTAL DOSE: 1.1, 2.2, and 3.4 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--Tokomaru silt loam, time period--1974 and 1975
EFFECTS: At all rates, moderate weed control with severely reduced growth and yield of lotus
COMMENTS: Dinoseb most effective of 6 pre-emergence herbicides tested and 2,4-DB best of 5 postemergence herbicides; crop showed no tolerance towards atrazine, cyanazine, metribuzin, or bentazone
REFERENCE: Ivens, G.W., "Preliminary Evaluation of Pre- and Post-Emergence Herbicides in "Maku" Lotus," Proc. 28th. New Zealand Weed and Pest Cont. Conf. 28:31-34 (1975).

<5495>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: Bentazon
PLANT: Plants; Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.5 to 4.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 or 50 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1971 and 1972
EFFECTS: Moderate weed control at 3.0 lb/A (late postemergence) with slight pea damage but no adverse effect on yield
COMMENTS: Cyanazine did not cause serious crop damage, except on a free-draining soil where leaching occurred, but knotgrass not adequately controlled
REFERENCE: King, J.M. and R.P. Handley, "Post-Emergence Herbicide Experiments in Peas and Dwarf Beans," Proc. 11th. Br. Weed Cont. Conf. 11(2):539-546 (1972).

<5496>
CHEMICAL NAME: 2,1,3-Benzothiadiazin-4(3H)-one, 3-(1-methylethyl)-1H-, 2,2-dioxide
CHEMICAL COMMON NAME: BAS-3510
PLANT: Nutsedge, yellow (CYPERUS ESCULENTUS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 4.0 and 8.0 lb/A
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Effective control of nutsedge; no effect on bluegrass sod
COMMENTS: Promising results with BAS-3510, BAS-3516; DSMA; MBR-8251, and S-21634; some turf injury noted for 2,4-D, MBR-8251, and S-21634
REFERENCE: Jagschitz, J.A., "Evaluation of Herbicides for Nutsedge Control in Turfgrass," Proc. Northeast. Weed Sci. Soc. 27:331-333 (1973).

<5497>
CHEMICAL NAME: 2,1,3-Benzothiadiazole, 4,5,7-trichloro-
CHEMICAL COMMON NAME: TH-052-H
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3)M, 10(-4)M, 10(-5)M, 10(-6)M, and 10(-7)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Complete control of shoot emergence
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<5498>
CHEMICAL NAME: 2,1,3-Benzothiadiazole, 5-chloro-6-ethoxycarbonylmethoxy-
CHEMICAL COMMON NAME: DU-16333
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 100 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Promoted tuber sprouting
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<5499>
CHEMICAL NAME: 2,1,3-Benzothiadiazole, 5,7-dichloro-4-ethoxycarbonylmethoxy-
CHEMICAL COMMON NAME: DU-13594
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 100 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: Promoted tuber sprouting

<5499>
<5499> CONT.
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<5500>
CHEMICAL NAME: 2,1,3-Benzothiadiazole, 7-chloro-4-ethoxycarbonylmethoxy-
CHEMICAL COMMON NAME: DU-17623
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 1.0-100.0 mg/l.
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: No activity on sprouting or basal bulb depth
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<5501>
CHEMICAL NAME: 2,2' Bioxirane
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.00071 to 0.001%
APPLICATION METHODS: Lateral root treatment for 2 hr
EXPERIMENTAL CONDITIONS: Seeds germinated in moist sand; when radicles 3 to 4 cm long, tips removed and 1 to 2 cm long laterals treated; roots put back in sand after treatment, fixations made at various times
EFFECTS: Chromosome aberrations induced by diepoxybutane; 44.7% aberrant cells, 0.531 plus or minus 0.041 aberrations per cell, and 0.180 plus or minus 0.025 translocations per cell at 0.0009% and treatment temperature of 22 C with 48 hr recovery period at 20 C
COMMENTS: Aberrations increase with temperature and concentration
REFERENCE: Swietlinska, Z., J.Zuk, M. Korzen, and J. Zbrzeska, "The Effect of Diepoxybutane on Chromosomes of VICIA FABA," Mol. Gen. Genet. 99:322-332 (1967).

<5502>
CHEMICAL NAME: 2,2'-Dipyridylium, 1,1'-ethylene-, dibromide
PLANT: Pondweed, American (POTOMOGETON NODOSUS); Pondweed, sago (POTOMOGETON PECTINATUS)
EXPERIMENTAL DOSE: 5 and 20 lb/A
APPLICATION METHODS: Addition to soil prior to immersing test containers in water; when plants died, new plants added to test toxicity
EXPERIMENTAL CONDITIONS: Greenhouse study; field study of selected compounds
EFFECTS: No control
COMMENTS: Fenac and dichlobenil showed outstanding activity with good persistence in water-saturated soil; fenac and silvex tested in field trials in an irrigation canal in eastern Wyoming; sodium salt and amide of lenac did not give adequate weed control
REFERENCE: Frank, P.A., R.H. Hodgson, and R.D. Comes, "Evaluation of Herbicides Applied to Soil for Control of Aquatic Weeds in Irrigation Canals," Weeds 11(2):124-128 (1963).

<5503>
CHEMICAL NAME: 2,3-Butanediol, 1,4-dimercapto-, (R*,S*)-
CHEMICAL COMMON NAME: Dithioerythritol
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 to 10.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; pea leaf sections; radiotracer studies of alkane synthesis
EFFECTS: Inhibited alkane biosynthesis
COMMENTS: Dithioerythritol, dithiothreitol, and mercaptoethanol (but not glutathione or cysteine) specifically inhibited alkane biosynthesis in young pea leaf tissue, and at the same time elongated chains accumulate in wax ester and fatty aldehyde fractions; inhibition of C(31) alkane synthesis by DTE resulted in accumulation of C(32)
REFERENCE: Buckner, J.S. and P.E. Kolattukudy, "Specific Inhibition of Alkane Synthesis with Accumulation of Very Long Chain Compounds by Dithioerythritol, Dithiothreitol, and Mercaptoethanol in PISUM SATIVUM," Arch. Biochem. and Biophys. 156:34-45 (1973).

<5504>
CHEMICAL NAME: 2,3-Butanediol, 1,4-dimercapto-, [S-(R*,R*)]-
CHEMICAL COMMON NAME: Dithiothreitol
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 to 10.0 mM
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; pea leaf sections; radiotracer studies of alkane synthesis
EFFECTS: Inhibited alkane biosynthesis
COMMENTS: Dithioerythritol, dithiothreitol, and mercaptoethanol (but not glutathione or cysteine) specifically inhibited alkane biosynthesis in young pea leaf tissue, and at the same time elongated

<5504> CONT.
chains accumulated in wax ester and fatty aldehyde fractions; inhibition of C(31) alkane synthesis by DTE resulted in accumulation of C(32)
REFERENCE: Buckner, J.S. and P.E. Kolattukudy, "Specific Inhibition of Alkane Synthesis with Accumulation of Very Long Chain Compounds by Dithioerythritol, Dithiothreitol, and Mercaptoethanol in PISUM SATIVUM," Arch. Biochem. and Biophys. 156:34-45 (1973).

<5505>
CHEMICAL NAME: 2,3-Propanediol, 1-pentachlorophenoxy-
PLANT: Rose (ROSA sp.)
EXPERIMENTAL DOSE: 2000 ppm
APPLICATION METHODS: Acetone-water-Santomerse solutions of the test compound applied as spray
EXPERIMENTAL CONDITIONS: Exposure concentration tested--greatest dilution giving 90-100% red spider mortality; excised rose leaves; 0(no toxicity) to 4(most toxic) toxicity scale
EFFECTS: Toxicity rating of 3
COMMENTS: Main emphasis of study--toxicity to insects
REFERENCE: Weinman, C. J., and G. C. Decker, "Toxicity of Some Chlorinated Phenol Derivatives," J. Econ. Entomol. 40(1):74-78 (1947).

<5506>
CHEMICAL NAME: 2,3-Pyridinedicarboxylic acid
CHEMICAL COMMON NAME: Quinolinic acid
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: Greater than 3.2 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: No inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5507>
CHEMICAL NAME: 2,4-Pentadienoic acid, 5-(1-hydroxy-2,6,6-trimethyl-4-oxo-2-cyclohexen-1-yl)-3-methyl-, [S-(Z,E)]-
CHEMICAL COMMON NAME: Abscisic acid
PLANT: Bladderwort (UTRICULARIA NIFLEXA)
EXPERIMENTAL DOSE: 10 mg/l.
APPLICATION METHODS: Addition to nutrient solution
EXPERIMENTAL CONDITIONS: Laboratory study; IN VITRO culture of shoot tips of U. INFLEXA in glass tubes or flasks containing White's nutrient medium; incubation temperature--28 C; photoperiod--18 hr; evaluation time--up to 10 wk
EFFECTS: Reduced growth in short day conditions, but no adverse effect during long day conditions; no apparent effect on flowering
COMMENTS: MEFA showed strong herbicidal effect and killed plants; AMO-1618 and coumarin inhibited apical as well as lateral bud growth; These three compouds and ABA, kinetin, BA, and zeatin unable to promote flowering under non-inductive conditions; BA stimulated growth in both long and short days; even in the latter conditions AMO-1618 and coumarin totally inhibited flowering, whereas ABA, kinetin and BA permitted 80-100 per cent of the cultures to flower; zeatin lowered the percentage of flowering cultures
REFERENCE: Ram, H.Y.M., H. Harada, and J.P. Nitsch, "Studies on Growth and Flowering in Axenic Cultures of Insectivorous Plants. III. Effects of Photoperiod, Ethrel, Morphactin and a Few Other Growth Substances and Metabolic Inhibitors on UTRICULARIA INFLEXA," Z. Pflanzenphysiol. Bd. 68(5):235-253 (1972).

<5508>
CHEMICAL NAME: 2,4-Pentadienoic acid, 5-(1-hydroxy-2,6,6-trimethyl-4-oxo-2-cyclohexen-1-yl)-3-methyl-, [S-(Z,E)]-
CHEMICAL COMMON NAME: Abscisic acid
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 4 g/ha (10 ppm)
APPLICATION METHODS: Foliage spray, 400 l./ha
EXPERIMENTAL CONDITIONS: Tubers planted in pots, shoots emerged in 7-8 days; spraying after shoot establishment; pots placed in randomized blocks
EFFECTS: No significant reduction in shoot number; insignificant increase in tuber number
COMMENTS: Not effective for nutgrass control
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<5509>
CHEMICAL NAME: 2,4-Pentadienoic acid, 5-(1-hydroxy-2,6,6-trimethyl-4-oxo-2-cyclohexen-1-yl)-3-methyl-, [S-(Z,E)]-
CHEMICAL COMMON NAME: Abscisic acid
PLANT: Pear (PYRUS COMMUNIS)
EXPERIMENTAL DOSE: 1.8 X 10(-5) M
APPLICATION METHODS: Addition to RNA-DNA fractions from pear embryos
EXPERIMENTAL CONDITIONS: Laboratory study

<5509>
<5509> CONT.
EFFECTS: Compositional changes of pear embryo RNA
COMMENTS: Greatly altered nucleotide composition of rapidly labelled RNA species; mechanism of abscisic acid action may be related to change in read-out pattern of genome
REFERENCE: Khan, A.A. and C.C. Anojulu, "Abscisic Acid Induced Changes in Nucleotide Composition of Rapidly Labelled RNA Species of Pear Embryos," Biochem. Biophys. Res. Comm. 38(6):1069-1075 (1970).

<5510>
CHEMICAL NAME: 2,4-Pentadienoic acid, 5-(1-hydroxy-2,6,6-trimethyl-4-oxo-2-cyclohexen-1-yl)-3-methyl-, [S-(Z,E)]-
CHEMICAL COMMON NAME: Abscisic acid
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 4.0 g/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha; 0.5% Biofilm added
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: Reduced shoot dry weight; no further adverse effects
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<5511>
CHEMICAL NAME: 2,4-Pentadienoic acid, 5-(1-hydroxy-2,6,6-trimethyl-4-oxo-2-cyclohexen-1-yl)-3-methyl-, [S-(Z,E)]-
CHEMICAL COMMON NAME: Abscisic acid
PLANT: Duckweed (LEMNA PERPUSILLA)
EXPERIMENTAL DOSE: 1.0 ppm
APPLICATION METHODS: Addition to culture solution
EXPERIMENTAL CONDITIONS: Laboratory study; light intensity--27,500 lux/sq m; temperature--21 to 23 C
EFFECTS: Reduced growth
COMMENTS: Abscisin inhibited growth of LEMNA MINOR cultures; culture appeared nearly completely dormant but revived readily by transferring to fresh medium free of dormin; cytokinin benzyladenine, but not auxin or gibberellin, counteracted dormin effect
REFERENCE: van Overbeek, J., J.E. Loeffler and M.I.R. Mason, "Dormin (Abscisin II), Inhibitor of Plant DNA Synthesis?," Sci. 156:1497-1499 (1967).

<5512>
CHEMICAL NAME: 2,5-Pyridinedicarboxylic acid
CHEMICAL COMMON NAME: Isocinchomeronic acid
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: Greater than 3.2 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: No inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5513>
CHEMICAL NAME: 2,6-Lutidine, 4-amino-3,5-dichloro-
PLANT: Tobacco (NICOTIANA TABACUM); Tomato (LYCOPERSICON ESCULENTUM); Celery (APIUM GRAVEOLENS); Corn (ZEA MAYS); Bean, kidney (PHASEOLUS VULGARIS); Cucumber (CUCUMIS SATIVUS); Spinach (SPINACIA OLERACEA); Strawberry (FRAGARIA sp.); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: Less than 1.0 ppm
APPLICATION METHODS: Addition to hydroponics culture solution
EXPERIMENTAL CONDITIONS: Greenhouse study; hydroponics culture
EFFECTS: Distortion of meristem and leaves by metabolized impurity of chicken manure
COMMENTS: An impurity, 4-amino-3,5-dichloro-2,6-lutidine, in coccidiostat clopidol caused phytotoxicity; increased potency after poultry ingestion indicated that impurity metabolized; most likely metabolite 4-amino-3,5-dichloro-6-methyl picolinic acid
REFERENCE: Minchinton, I.R., D.L. Jones, and J.P.L. Sang, "Poultry Manure Phytotoxicity," J. Sci. Fd. Agric. 24:1437-1448 (1973).

<5514>
CHEMICAL NAME: 2,6-Piperidinedione, 4-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-, [1S-[1 alpha(S), 3 alpha, 5 beta]]-
CHEMICAL COMMON NAME: Cycloheximide
PLANT: Onion (ALLIUM CEPA)
EXPERIMENTAL DOSE: 25 ppm
APPLICATION METHODS: Spray treatments with 15-18 ml of suspension; solutions prepared by suspending test compound in tap water containing 0.05% Linor as spreader
EXPERIMENTAL CONDITIONS: Field A (well-grown) and field B (poorly-grown); seedlings transplanted to field on October 12--5 plots and 12 plants per plot, fertilizer added in January, spraying on May 2; analysis of leaves on May 2 and 6; control--tap water and Linor
EFFECTS: Chlorosis, discoloration, and wilting of whole leaves 4 days after spraying; field A plants had 30%

<5514> CONT.
less DNA but 77% more RNA than control, field B plants had 20% more DNA and 39% more RNA than control; spraying on old leaves did not affect chlorophyll content, chlorophyll synthesis inhibited in younger leaves; water content, dry matter, and ash content no different between treated and control leaves
REFERENCE: Shishiyama, J., M. Fukutomi, and S. Akai, "Effect of Some Fungicides on the Synthesis of Chlorophylls, Deoxyribonucleic Acid, and Ribonucleic Acid in Onion Leaves," Phytopathology 55:844-847 (1965).

<5515>
CHEMICAL NAME: 2,6-Piperidinedione, 4-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-, [1S-[1 alpha(S), 3 alpha, 5 beta]]-
CHEMICAL COMMON NAME: Cycloheximide
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 100 ppm
APPLICATION METHODS: Injection of 300ml fluid of test solution
EXPERIMENTAL CONDITIONS: Two 3-year old peach trees; injection holes drilled 30cm above soil line; trees injected while dormant, at bud swell stage, and at full leaf stage
EFFECTS: Severe leaf burn and terminal branch dieback with no recovery
COMMENTS: 0.001M concentration dissolved in 0.1M dimethyl sulfoxide did not increase injury; effect on peach mosaic virus (strain PM-4) and necrotic ringspot virus also investigated
REFERENCE: Pine, T.S., "Reactions of Peach Trees and Peach Tree Viruses to Treatment with Dimethyl Sulfoxide and Other Chemicals," Phytopathology 57: 671-673 (1967).

<5516>
CHEMICAL NAME: 2,6-Piperidinedione, 4-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-, [1S-[1 alpha(S), 3 alpha, 5 beta]]-
CHEMICAL COMMON NAME: Cycloheximide
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 50 micro M/seedling
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Laboratory study; in dark; temperature--25 C; evaluation time--8 hr
EFFECTS: Inhibited activity of phenylalanine deaminase
COMMENTS: Exposure of dark-grown gherkin seedlings during three hours to light caused hypocotyl increase in level of phenylalanine deaminase (PADAsc) followed by a decline; spraying seedlings with cycloheximide prior to the light treatment partly blocks the increase in PADAsc whereas in plants sprayed at end of irradiation high enzyme activity reached
REFERENCE: Engelsma, G., "Effect of Cycloheximide on the Inactivation of Phenylalanine Deaminase in Gherkin Seedlings", Jurze Originalmitteilungen 54:319-320 (1967).

<5517>
CHEMICAL NAME: 2,6-Piperidinedione, 4-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-, [1S-[1 alpha(S), 3 alpha, 5 beta]]-
CHEMICAL COMMON NAME: Cycloheximide
PLANT: Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 1.0 ml/30 seedlings
APPLICATION METHODS: As solution soak of seedlings
EXPERIMENTAL CONDITIONS: Laboratory study; radiolabeled amino acids; germinating seedlings used
EFFECTS: Blocked RNA synthesis
COMMENTS: Cycloheximide selectively blocked rRNA synthesis without altering poly (A)(+) RNA synthesis; processing of 2.3 X 10(6) dalton pre-rRNA severely impaired; observation should help in studies of mRNA metabolism in plants; when concentration of cycloheximide lowered, it possible to completely block protein synthesis without preventing RNA synthesis
REFERENCE: Delseny, M., L. Aspart, and Y. Guitton, "Effect of the Protein Synthesis Inhibitor Cycloheximide on RNA Synthesis in Radish Seedlings," Biochimie 59:51-57 (1977).

<5518>
CHEMICAL NAME: 2,6-Piperidinedione, 4-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-, [1S-[1 alpha(S), 3 alpha, 5 beta]]-
CHEMICAL COMMON NAME: Cycloheximide
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 0.001%
APPLICATION METHODS: Foliar spray daily for 12 days
EXPERIMENTAL CONDITIONS: Laboratory study; chloroplasts harvested from green and chlorotic leaves, homogenized, isolated, and purified; temperature--2C; electrophoresis
EFFECTS: Inhibited chlorophyll-complex synthesis
COMMENTS: Chloramphenicol, streptomycin, and oxytetracyclin inhibited synthesis of two chlorophyll-protein complexes and two other proteins; uncertain whether absent or weak bands of complexes result of inhibited protein synthesis or result of deficient chlorophyll
REFERENCE: Machold, O., "Lamellar Proteins of Green and Chlorotic Chloroplasts as Affected by Iron Deficiency and Antibiotics," Biochim. Biophys. Acta 238:324-331 (1971).

<5519>
CHEMICAL NAME: 2,6-Piperidinedione, 4-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-, [1S-[1 alpha(S), 3 alpha, 5 beta]]-
CHEMICAL COMMON NAME: Cycloheximide
PLANT: Cocklebur (XANTHIUM STRUMARIUM)
EXPERIMENTAL DOSE: 0.2 and 2.0 mM
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; leaf disc assay
EFFECTS: Inhibited conversion of labelled nucleosides to CO(2)

<5519>
<5519> CONT.
COMMENTS: Cycloheximide inhibited absorption of labelled orotic acid, uridine and cytidine and the catabolism of these compounds to CO(2) in cocklebur leaf discs; markedly inhibited conversion of orotic acid and uridine to RNA cytidylic acid, but had less influence upon conversions to RNA uridylic acid
REFERENCE: Ross, C., "Influence of Cycloheximide (Actidione) Upon Pyrimidine Nucleotide Metabolism and RNA Synthesis in Cocklebur Leaf Discs," Biochimica et Biophysica Acta 166:40-47 (1968).

<5520>
CHEMICAL NAME: 2,6-Piperidinedione, 4-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-, [1S-[1 alpha(S), 3 alpha, 5 beta]]-
CHEMICAL COMMON NAME: Cycloheximide
PLANT: Bean, broad (VICIA FABA)
EXPERIMENTAL DOSE: 10 ug/ml
APPLICATION METHODS: Immersion in test solutions
EXPERIMENTAL CONDITIONS: Laboratory study; primary root-tip cells of broad bean
COMMENTS: Induced complete inhibition of onset of mitosis and caused prophase poisoning and metaphase arrest within 2-4 hr in root meristem
REFERENCE: Arora, O.P., V.C. Shah, S.R.V. Rao, and C.M.S. Dass, "Effect of Cycloheximide on Cell Division and Macromolecular Synthesis in Root-Tip Cells of VICIA FABA L.," Indian J. Exp. Biol. 8:121-125 (1970).

<5521>
CHEMICAL NAME: 2,6-Piperidinedione, 4-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-, [1S-[1 alpha(S), 3 alpha, 5 beta]]-
CHEMICAL COMMON NAME: CHM
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1.0 and 10.0 micro g/ml
APPLICATION METHODS: Addition to assay solutions
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated barley seedlings
EFFECTS: Inhibited protein synthesis (increased ATP levels) and affected membrane performance
COMMENTS: CHM had minimal effects on energy transfer (respiratory O(2) uptake and ATP levels) in barley root cells; uncoupler CCCP significantly increased respiratory O(2) uptake and drastically reduced ATP level; ADP levels measured only in a few cases
REFERENCE: Luttge, U., A. Lanchli, E. Ball, and M.G. Pitman, "Cycloheximide: A Specific Inhibitor of Protein Synthesis and Intercellular Ion Transport in Roots," Experimentia 30:470-471 (1974).

<5522>
CHEMICAL NAME: 2,6-Pyridinedicarboxylic acid
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: Greater than 3.2 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: No inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5523>
CHEMICAL NAME: 2,6-Pyridinedicarboxylic acid, 4-hydroxy-
CHEMICAL COMMON NAME: Chelidamic acid
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: Greater than 3.1 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: No inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5524>
CHEMICAL NAME: 2,7:3,6-Dimethanonaphth[2,3-]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a alpha, 2 beta, 2a alpha, 3 beta, 6 beta, 6a alpha, 7 beta, 7a alpha)-
CHEMICAL COMMON NAME: Dieldrin
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.25, and 2.0 oz/bushel of seed
APPLICATION METHODS: Seed treatment; WP formulations of all doses, EC formulation of 1.0 oz/bushel dose
EXPERIMENTAL CONDITIONS: Experiment 1--field study, slurry treatments of seed, 18-ft row plots containing 100 seeds, 8 replications, 1.25-oz rate tested, 19-month old seeds; experiment 2--field study, 20-ft rows with 100 seeds/row, 4 replications, randomized complete block design, highly vivable seeds, all rates except 1.25 oz tested
EFFECTS: Experiment 1--significant decrease in number of emerged plants and significant increase in mean

<5524> CONT.
emergence period; Experiment 2--no appreciable injury except at 2-oz rate where germination injury was recorded as slight
COMMENTS: Older experiment 1 seeds apparently less resistant
REFERENCE: Starks, K.J. and J.H. Lilly, "Insecticide Seed Treatment of Soybeans in Relation to Phytotoxicity and Seed-Corn Maggot Control," J. Econ. Entomol. 48(5):538-543 (1955).

<5525>
CHEMICAL NAME: 2,7:3,6-Dimethanonaphth[2,3-]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a alpha, 2 beta, 2a alpha, 3 beta, 6 beta, 6a alpha, 7 beta, 7a alpha)-
CHEMICAL COMMON NAME: Dieldrin
PLANT: Tomato (LYCOPERSICON ESCULENTUM); Cabbage (BRASSICA OLERACEA); Eggplant (SOLANUM MELONGENA)
EXPERIMENTAL DOSE: 20 and 200 mg/seedling
APPLICATION METHODS: EC formulations applied in 4 small holes 2 in. deep around base of stem
EXPERIMENTAL CONDITIONS: Pot studies; intervals of 10 days between plantings; no direct contact with seedlings, 100 ml water given daily to each plant; observations at 10 day invervals; randomized complete design with 5 replications--5 plants per replication
EFFECTS: 200 mg/plant caused tomato growth inhibition with chlorotic leaves, reduced weight of all seedlings, and poor root and shoot development in tomato; 20 mg/plant showed no phytotoxicity
REFERENCE: Kabir, S.M.H. and M.H. Khan, "Effects of Diazinon, Dieldrin, and Supracide on Seedlings of Tomato, Eggplant, and Cabbage," J. Econ. Entomol. 65(4):1179-1180 (1972).

<5526>
CHEMICAL NAME: 2,7:3,6-Dimethanonaphth[2,3-]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a alpha, 2 beta, 2a alpha, 3 beta, 6 beta, 6a alpha, 7 beta, 7a alpha)-
CHEMICAL COMMON NAME: Dieldrin
PLANT: Bean, bush (PHASEOLUS HUMILIS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 0.4 oz/cwt of seed
APPLICATION METHODS: Slurry treatments--seeds placed in insecticide mixture and shaken 3 to 10 min
EXPERIMENTAL CONDITIONS: Randomized complete block design with 4 replications; Lima silt loam; May 24 planting
EFFECTS: No significant phytotoxicity
COMMENTS: Main study emphasis was seedcorn maggot control
REFERENCE: Eckenrode, C.J., N.L. Gauthier, D. Danielson, and D.R. Webb, "Seedcorn Maggot: Seed Treatments and Granule Furrow Applications for Protecting Beans and Corn," J. Econ. Entomol. 66(5):1191-1194 (1973).

<5527>
CHEMICAL NAME: 2,7:3,6-Dimethanonaphth[2,3-]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a alpha, 2 beta, 2a alpha, 3 beta, 6 beta, 6a alpha, 7 beta, 7a alpha)-
CHEMICAL COMMON NAME: Dieldrin
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Pea, sweet (PISUM SATIVUM); Rice (LEERSIA ORYZOIDES); Corn (ZEA MAYS); Kenaf; Radish (RAPHANUS SATIVUS)
EXPERIMENTAL DOSE: 1, 5 and 10% solution
APPLICATION METHODS: Formulation-20% EC; application by soaking seeds in water dilutions
EXPERIMENTAL CONDITIONS: Seeds soaked for 1, 2, 3, 4 and 5 hours at 25 C; seeds transferred to planting dishes and left under standerized temperature--18 C for pea and radish, 30 C for others; 4 replicates for each treatment--100 rice seeds, 50 cotton, Kenaf and radish seeds, 25 pea and corn seeds; observations for germination and growth
EFFECTS: Germination--cotton most severely effected (about 20% germination at 1%, less than 5% at 5% and 0% at 10%), maize showed next greatest effect (20% germination with 4 and 5 hr exposure to 5%, 0% with 3, 4 and 5 hr exposure at 10%), pea showed 52% germination with 5 hr exposure at 5% and 3% with 5 hr exposure at 10%, other plants only moderately affected; growth--all plants showed decreased growth, cotton, maize and peas were affected the most (0% growth at 10% of cotton and maize)
COMMENTS: Minor germination increase of kenaf, pea and radish at 1% and of kenaf at 5%; some growth stimulation, particularly in rice and kenaf
REFERENCE: Eid, A., B.F. Hanna, R.K. Mohammed, G.M. Amin, A.M. Ali and I.I. Guirguis, "Toxic Effect of Insecticides on Seeds," Agric. Res. Rev. 49(1):46-54 (1971).

<5528>
CHEMICAL NAME: 2,7:3,6-Dimethanonaphth[2,3-]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a alpha, 2 beta, 2a alpha, 3 beta, 6 beta, 6a alpha, 7 beta, 7a alpha)-
CHEMICAL COMMON NAME: Dieldrin
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.8 lb/A
APPLICATION METHODS: Postemergence spray for insect control; 10 gal/A; 3X applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted
COMMENTS: Spray injury generally more severe with accumulative applications; most severe with oil soluble formulation of DDT for all dates and accumulative applications, and for dilan and BHC with single applications
REFERENCE: Probst, A. H. and R. T. Everly, "Effect of Foliage Insecticides on Growth, Yield and Chemical Composition of Soybeans," Agron. J. 49:577-581 (1957).

<5529>
CHEMICAL NAME: 2,7:3,6-Dimethanonaphth[2,3-]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a alpha, 2 beta, 2a alpha, 3 beta, 6 beta, 6a alpha, 7 beta, 7a alpha)-
CHEMICAL COMMON NAME: Dieldrin
PLANT: Cotton (GOSSYPIUM HIRSUTUM); Soybean (GLYCINE MAX); Corn (ZEA MAYS); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 5, 10, 20, 30, 40, and 50 ppm
APPLICATION METHODS: Pesticide dissolved in 25 ml acetone and diluted in water to give 5 ppm in 10 kg soil portion--treatment to give desired concentration

<5529>
<5529> CONT.
EXPERIMENTAL CONDITIONS: Greenhouse and laboratory study; 3 seed lots--high, medium, and low vigor; 200 seeds of each species of each vigor level planted in soil containing pesticide in 4 replicates; seedling emergence, height, and dry weight recorded; low temperature study in laboratory
EFFECTS: Pesticide residues alone, no significant effects; pesticide residue in combination with reduced vigor seeds resulted in reduced seedling height, dry weight, and germination energy; low temperatures also influence growth--50 ppm pesticide with low temperatures (13 C) caused 34 to 41% seedling reduction in low vigor cotton seeds, less in wheat seeds
COMMENTS: Reduction in seedling characteristics linearly related to increasing pesticide concentration and decreasing seed vigor; seed vigor reduction achieved by heating at 40 C; seed vigor is very important determining growth factor; different kinds of seeds respond differently
REFERENCE: Rajanna, B. and A.A. de la Cruz, "Stand Establishment and Early Growth of Field Crops as Influenced by Seed Vigor and Pesticide Residues," Seed. Sci. Technol. 5:71-85 (1977).

<5530>
CHEMICAL NAME: 2,7:3,6-Dimethanonaphth[2,3-]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a alpha, 2 beta, 2a alpha, 3 beta, 6 beta, 6a alpha, 7 beta, 7a alpha)-
CHEMICAL COMMON NAME: Dieldrin
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 12.5, 50.0, and 100.0 ppm
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Arredondo loamy fine sand; pot culture
EFFECTS: No adverse effect on germination but reduced root or shoot growth at high rates
COMMENTS: BHC decreased germination; all other insecticides increased germination or had no effect; root and top weights decreased by chlordane, lindane, aldrin, dieldrin, TDE, DDT and BHC; top weights reduced by methoxychlor; heptachlor and toxaphene had no effect on growth
REFERENCE: Eno, C.F. and P.H. Everett, "Effects of Soil Applications of 10 Chlorinated Hydrocarbon Insecticides on Soil Microorganisms and the Growth of Stringless Black Valentine Beans," Soil Sci. Soc. Am. Proc. 22:235-238 (1958).

<5531>
CHEMICAL NAME: 2,7:3,6-Dimethanonaphth[2,3-b]-oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a alpha, 2 beta, 2a beta, 3 alpha, 6 alpha, 6a beta, 7 beta, 7a alpha)-
CHEMICAL COMMON NAME: Endrin
PLANT: Tinda (CITRULLUS VULGARIS); Bottlegoard; Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.03 and 0.04 %
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Leaf spots within 3 or 7 days at both concentrations
COMMENTS: Safe (non-phytotoxic) insecticides on the cucurbits were DDVP, carbaryl, malathion, endosulfan, thiometon, and phosphamidon
REFERENCE: Sood, N.K., U.K. Kaushik, and V.S. Rathore, "Phytotoxicity of Modern Insecticides to Cucurbits," Indian J. Hort. 29(1):111-113 (1972)

<5532>
CHEMICAL NAME: 2,7:3,6-Dimethanonaphth[2,3-b]-oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a alpha, 2 beta, 2a beta, 3 alpha, 6 alpha, 6a beta, 7 beta, 7a alpha)-
CHEMICAL COMMON NAME: Endrin
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.4 lb/A
APPLICATION METHODS: Postemergence spray for insect control; 10 gal/A; 3X applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted
COMMENTS: Spray injury generally more severe with accumulative applications; most severe with oil soluble formulation of DDT for all dates and accumulative applications, and for dilan and BHC with single applications
REFERENCE: Probst, A. H. and R. T. Everly, "Effect of Foliage Insecticides on Growth, Yield and Chemical Composition of Soybeans," Agron. J. 49:577-581 (1957).

<5533>
CHEMICAL NAME: 2,7:3,6-Dimethanonaphth[2,3-b]-oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a alpha, 2 beta, 2a beta, 3 alpha, 6 alpha, 6a beta, 7 beta, 7a alpha)-
CHEMICAL COMMON NAME: Endrin
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.01, 0.02, and 0.04%
APPLICATION METHODS: As spray in 625 l./ha of spray material; postemergence on 42-day old crop
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: Mild at 0.01%, 71.4% of leaves affected after 3 and 6 days; mild at 0.02%, 83.3% of leaves affected after 3 and 6 days; medium at 0.04%, 100% of leaves affected after 3 and 6 days
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadyan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<5534>
CHEMICAL NAME: 2,7:3,6-Dimethanonaphth[2,3-b]-oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a alpha, 2 beta, 2a beta, 3 alpha, 6 alpha, 6a beta, 7 beta, 7a alpha)-
CHEMICAL COMMON NAME: Endrin
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 0.2 to 0.8 lb/A; Espesol 3
APPLICATION METHODS: Immersion
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight leaf damage
COMMENTS: Certain concentrates containing xylene-type solvents most phytotoxic to terminal buds; concentrates formulated in laboratory with xylene isomers and ethyl benzene, found phytotoxic to young tobacco seedings
REFERENCE: Self, L.S. and F.E. Guthrie, "Tobacco Malformations Caused by Insecticidal Treatments Used for Budworm Control," Tobacco Sci. 6:78-83 (1962).

<5535>
CHEMICAL NAME: 3-Benzofuranone-(2H)
CHEMICAL COMMON NAME: Coumaran-3-one
PLANT: Bean, snap (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 40 mg of lanolin preparation (1% experimental compound)
APPLICATION METHODS: Applied directly to primary leaf pulvinus
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: No effect noted
COMMENTS: 4-chlorophenoxyacetic acid very active as was 4-chlorophenyl ester; slight effect noted within two days after application; within ten days stems badly swollen and trifoliate leaves dwarfed
REFERENCE: Kalinowski, M.L. and L.W. Kalinowski, "Cyclization of Phenoxyacetic Acid and Some Chlorophenoxyacetic Acids," J. Chem. Soc. 70:1970-1971 (1948).

<5536>
CHEMICAL NAME: 3-Butenoic acid, 2-amino-4-(2-amino-3-hydroxypropoxy)-, (E)-
CHEMICAL COMMON NAME: Rhizobitoxine
PLANT: Sorghum (SORGHUM BICOLOR); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Rape (BRASSICA NAPUS); Corn (ZEA MAYS); Cotton (GOSSYPIUM HIRSUTUM); Wheat (TRITICUM AESTIVUM); Ryegrass, Italian (LOLIUM MULTIFLORUM); Bluegrass, Kentucky (POA PRATENSIS); Mustard (BRASSICA JAPONICA); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 10, 13, 18, 23, 35, and 100 ug; 0.22 mM
APPLICATION METHODS: Treatments applied to leaves in 500 to 5000 ppm (w/v) concentrations of ethanol:glycerol:water (50:50:1 v/v) containing dissolved herbicide; postemergence applications, premergence also on mustard
EXPERIMENTAL CONDITIONS: 2 test methods; method 1--seedlings grown in test tubes with bottom immersed in nutrient medium, herbicide treatments applied to leaves, growth chamber grown plants (27 C and 16-hr day and 21 C dark period); method 2--mustard only, petri dish germination in medium containing 10 ml herbicide solution, chlorophyll content determined
EFFECTS: Mustard--23 ug on leaves killed plants within 8 days, 0.22 mM preemergence petri dish application inhibited chlorophyll synthesis 49% and root growth 33%; sorghum--10 ug caused severe chlorosis and growth retardation; crabgrass--10 ug caused no chlorosis to moderate chlorosis, 35 ug caused leaf malformation (2 and 3 wk recovery), 100 ug caused moderate to severe chlorosis and severe growth retardation; pigweed--same as crabgrass at 10 and 100 ug, 18 ug caused temporary chlorosis; soybean--same as crabgrass at 10 and 100 ug; rape--same as crabgrass at 10 and 100 ug; ryegrass, corn and cotton--100 ug caused moderate to severe chlorosis, slight growth retardation; wheat--100 ug caused only slight chlorosis, no growth retardation; bluegrass--35 ug caused virtually no effect, slight leaf molting but plant growth not affected
COMMENTS: Rhizobitoxine--bacterially produced phytotoxin from RHIZOBIUM JAPONICUM
REFERENCE: Owens, L.D., "Herbicidal Potential of Rhizobitoxine," Weed Sci. 21(1):63-66 (1973).

<5537>
CHEMICAL NAME: 3-Butynoic acid, 2-hydroxy-
CHEMICAL COMMON NAME: HBA
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 5 X 10(-5) to 5 X 10(-2) M
APPLICATION METHODS: Addition to enzyme assay solutions; immersion of leaf discs; and addition to nutrient solution in which intact plants were growing
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--up to 600 min (enzyme study), 400 min (leaf disc study), and 2 to 24 hr (intact plant study); assays in darkness (enzyme and leaf disc) or light (intact plants)
EFFECTS: Inhibited glycollate oxidase
COMMENTS: MEHBA applied to roots of variety of plant species caused irreversible inhibition of glycollate oxidase in leaves; sodium salt appeared to be less active; degree of inhibition never exceeded 80% although residual enzyme activity inhibited by addition of HBA IN VITRO
REFERENCE: Jewess, P.J., M.W. Kerr, and D.P. Whitaker, "Inhibition of Glycollate Oxidase from Pea Leaves," FEBS Letters 53:292-296 (1975).

<5538>
CHEMICAL NAME: 3-Butynoic acid, 2-hydroxy-, methyl ester
CHEMICAL COMMON NAME: MEHBA
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 5 X 10(-5) to 5 X 10(-2) M
APPLICATION METHODS: Addition to enzyme assay solutions; immersion of leaf discs; and addition to nutrient solution in which intact plants were growing
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--up to 600 min (enzyme study), 400 min (leaf disc study), and 2 to 24 hr (intact plant study); assays in darkness (enzyme and leaf disc) or light (intact plants)
EFFECTS: Inhibited glycollate oxidase

<5538>
<5538> CONT.
COMMENTS: MEHBA applied to roots of variety of plant species caused irreversible inhibition of glycollate oxidase in leaves; sodium salt appeared to be less active; degree of inhibition never exceeded 80% although residual enzyme activity inhibited by addition of HBA IN VITRO
REFERENCE: Jewess, P.J., M.W. Kerr, and D.P. Whitaker, "Inhibition of Glycollate Oxidase from Pea Leaves," FEBS Letters 53:292-296 (1975).

<5539>
CHEMICAL NAME: 3-Butynoic acid, 2-hydroxy-, monosodium salt
CHEMICAL COMMON NAME: NaHBA
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 5 X 10(-5) to 5 X 10(-2) M
APPLICATION METHODS: Addition to enzyme assay solutions; immersion of leaf discs; and addition to nutrient solution in which intact plants were growing
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--up to 600 min (enzyme study), 400 min (leaf disc study), and 2 to 24 hr (intact plant study); assays in darkness (enzyme and leaf disc) or light (intact plants)
EFFECTS: Inhibited glycollate oxidase
COMMENTS: MEHBA applied to roots of variety of plant species caused irreversible inhibition of glycollate oxidase in leaves; sodium salt appeared to be less active; degree of inhibition never exceeded 80% although residual enzyme activity inhibited by addition of HBA IN VITRO
REFERENCE: Jewess, P.J., M.W. Kerr, and D.P. Whitaker, "Inhibition of Glycollate Oxidase from Pea Leaves," FEBS Letters 53:292-296 (1975).

<5540>
CHEMICAL NAME: 3-Pyridazinamine, N-(1-methylethyl)-6-phenylthio-
PLANT: Broccoli (BRASSICA OLERACEA); Grasses
EXPERIMENTAL DOSE: 2000 ppm
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Weeds sprayed to run-off; herbicide activity assessed 10 days after spraying
EFFECTS: 95% broadleaf and 60% grass weed control
REFERENCE: Relyea, D.I., J.A. Riddell, and P.O. Tawney, "3,6-Disubsituted Pyridazines," J. Med. Chem. 6:807-809 (1963).

<5541>
CHEMICAL NAME: 3-Pyridazinamine, 3-chloro-N-(1-methylethyl)-
PLANT: Broccoli (BRASSICA OLERACEA); Grasses
EXPERIMENTAL DOSE: 2000 ppm; 5 lb/A
APPLICATION METHODS: Postemergence (2000 ppm) and preemergence (5 lb/A) sprays
EXPERIMENTAL CONDITIONS: Postemergence--weeds sprayed to run-off; herbicide activity assessed 10 days after spraying; preemergence--control assessed 3 weeks after planting
EFFECTS: Postemergence--95% broadleaf and 80% grass weed control; preemergence--98% broadleaf and 95% grass weed control
COMMENTS: Preemergence application more effective
REFERENCE: Relyea, D.I., J.A. Riddell, and P.O. Tawney, "3,6-Disubsituted Pyridazines," J. Med. Chem. 6:807-809 (1963).

<5542>
CHEMICAL NAME: 3-Pyridinecarbonitrile, 6-chloro-2,4-dihydroxy-
PLANT: Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 1.0 lb/100 gal
APPLICATION METHODS: Foliar spray; 40 lb/sq in or less
EXPERIMENTAL CONDITIONS: Field study; time period--1938 to 1946
EFFECTS: No adverse effect on peach foliage
COMMENTS: Most promising fungicides of 506 organics evaluated were: acetanilide, p-chloro-alpha-isonitroso-; aniline, p,p'thiodi-; benzamide; benzimidazole; benzoic acid, p-chloro-; benzoic acid, 3,4-dichloro-; glycinonitrite, N-(o-methoxyphenyl)-; phenol, 2,2' methylenebis (4-chloro-; 2,2'-(2,2,2-trichloro-ethylidine)bis(4-chloro-; and phenol, 4,4'-isopropylidenedi-; possess satisfactory fungicidal properties, apparently stable when mixed with insecticides, lime and adjuvants, and appear safe to use on tender peach foliage
REFERENCE: Goldsworthy, M.C. and S.I. Gertler, "Fungicidal and Phytotoxic Properties of 506 Synthetic Organic Compounds," Plant Disease Rept. Supp. 189:89-109 (1949).

<5543>
CHEMICAL NAME: 3-Pyridinecarboxylic acid
CHEMICAL COMMON NAME: Nicotinic acid
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 4.1 to greater than 3.1 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: No inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5544>
CHEMICAL NAME: 3-Pyridinecarboxylic acid
CHEMICAL COMMON NAME: Nicotinic acid
PLANT: Kalanchoe (KALANCHOE DIAGREMONTIANA); (BRYOPHYLLUM CALYCINUM); (NICOTINIA GLAUCA); Sunflower (HELIANTHUS ANNUUS); Bean, kidney (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 1.0 to 3.0% in hydrous lanolin
APPLICATION METHODS: Lanolin applied to decapitated plants or to injured (needle prick) stem soft tissue
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Varied cancerous growths induced in plants with carcinogenic agents or growth substances
COMMENTS: Scharlach red found active in some cases with KALANCHOE DAIGREMONTIANA; application to apical internode after decapitation produced overgrowths which resembled crown galls; other carcinogens like 1,2,5,6-dibenzanthracene,3,4-benzpyrene, methylcholanthrene induced necrosis of treated zone; indoleacetic acid in lanolin on decapitated and injured stems induced root formation; stems cracked and small nodular masses formed; small overgrowths on decapitated kalanchoes present histological pictures identical with cron gall
REFERENCE: Levine, M., "Plant Responses to Carcinogenic Agents and Growth Substances: Their Relation to Crown Gall and Cancer," Bull. Torrey Bot. Club 67:199-226 (1940).

<5545>
CHEMICAL NAME: 3-Pyridinecarboxylic acid, 1-(4-chlorophenyl)-1,2-dihydro-4,6-dimethyl-2-oxo-
CHEMICAL COMMON NAME: CCDP
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 600 g/ha (1500 ppm)
APPLICATION METHODS: Foliage spray, 400 l./ha
EXPERIMENTAL CONDITIONS: Tubers planted in pots, shoots emerged in 7-8 days; spraying after shoot establishment; pots placed in randomized blocks
EFFECTS: No control
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<5546>
CHEMICAL NAME: 3-Pyridinecarboxylic acid, 1-(4-chlorophenyl)-1,2-dihydro-4,6-dimethyl-2-oxo-
CHEMICAL COMMON NAME: CCDP
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 600 g/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha; 05% Biofilm added
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: No adverse effects observed
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<5547>
CHEMICAL NAME: 3-Pyridinol
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 4.0 to 1.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature-H25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5548>
CHEMICAL NAME: 3,3-Dimethylurea, 1-(5,3a,4,5,6,7a-hexahydro-4,7-methanoindanyl)-
PLANT: Alligatorweed
EXPERIMENTAL DOSE: 5.0 and 20.0 lb/A; EC and ester
APPLICATION METHODS: Addition by syringe to water containing test species (submersed species) and spray (100 gal/A at 20 psi)
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--80 F; light intensity--60 to 80 ft c; photoperiod--10 hr; evaluation time--2 to 8 wk with continuous and varied (0.5 to 336 hr) contact
EFFECTS: Slight weed control at both rates
COMMENTS: Among 75 herbicides evaluated on three species of submersed weeds only diquat, endothal, and acrolein gave 85% or better control at 1 ppmw in still-water tests; only acrolein and endothal effective on submersed weeds at 1 ppmw in limited-exposure test; evaluation of 17 herbicides on three species of floating aquatic weeds indicated diquat effective
REFERENCE: Blackburn, R.D., "Evaluating Herbicides Against Aquatic Weeds," Weeds 11(1):21-24 (1963).

<5549>
<5549>
CHEMICAL NAME: 3,4-Xylidine, N-sec-butyl-2,6-dinitro-
CHEMICAL COMMON NAME: AC-92340
PLANT: Beggarweed, Florida (DESMODIUM TORTUOSUM); Pusley, Florida (RICHARDIA SCABRA) ; Peanut (ARACHIS HYPOGAEA); Crabgrass, large (DIGITARIA SANGUINALIS)
EXPERIMENTAL DOSE: 0.25, 0.50, 0.75, 1.0, 1.5, 2.0, and 3.0 lb/A
APPLICATION METHODS: Herbicides applied broadcast in 16 to 19 gallons of water per acre, spraying pressure 30psi using tractor-mounted compressed air sprayer; preplanting and preemergence applications
EXPERIMENTAL CONDITIONS: Dothan loamy sand; soil turned each winter and seedbeds prepared in March or early April; plots -- 6 rows wide each 20 feet long; herbicides in rows 3,4,5 and 6 incorporated 4 to 6 inches; peanuts planted immediately after incorporation; rows 1 and 2 had preemergence application
EFFECTS: 0.75, 1.5 and 1.0 lb/A gave almost complete control of annual grassweeds; preemergence applications less effective than preplant incorporated herbicides; broadleaf weed control generally less than grassweed control; no noticeable injury to peanut foliage
COMMENTS: Excellent control of annual grass weeds and substantial broadweed control; in general, increasing application rate of preemergence herbicides improved weed control; no measurable differences in weed control among herbicides tested
REFERENCE: Buchanan, G.A., R.D. McLaughlin, J. Bannon, and H. Ivy, "Performance of Dinitroaniline Herbicides in Peanuts," Proc. S. Weed Sci. Soc. 26: 95-105 (1973).

<5550>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: MH
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS);Bermudagrass, common (CYNODON DACTYLON);Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 300, 3000, and 30,000 ppm
APPLICATION METHODS: 5 sec immersion of intact plant in test solution
EXPERIMENTAL CONDITIONS: Greenhouse container culture; soil--Newe Yaar clay; evaluation time--4 and 6 wk
EFFECTS: Reduced shoot length of all test plants
COMMENTS: Effects varied from simulation to inhibition of aerial growth, increases in shoot number, and kill of plants
REFERENCE: Horowitz, M., "Effect of Growth Regulators on CYNODON DACTYLON (L.) Pers., SORGHUM HALEPENSE (L.) Pers., and CYPERUS ROTUNDUS L.," Weed Res. 12(1):11-20 (1972).

<5551>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: MH
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS);Bermudagrass, common (CYNODON DACTYLON);Johnson grass (SORGHUM HALEPENSE)
EXPERIMENTAL DOSE: 2.25 and 4.5 kg/ha
APPLICATION METHODS: Postemergence spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Greenhouse container culture; evaluation time--5 mo
EFFECTS: Shoot inhibition of all test plants at 4.5 kg/ha and of bermudagrass at 2.25 kg/ha also
COMMENTS: Effect of combinations of foliar spraying with ethephon, MH, flurecol or chlorflurecol followed after 2 days by spraying with the herbicides ddalapon or aminotriazole activated with ammonium thiocyanate, investigated; herbicides applied alone had no marked effect but combinations generally more toxic; ethephon stimulated growth of C. DACTYLON but combination with dalapon was phytotoxic; MH sprayed alone and combinations of flurecol or chlorflurecol with dalapon or aminotriazole were highly inhibitory to S. HALEPENSE; none of the treatments completely inhibited regrowth of G. ROTUNDUS
REFERENCE: Horowitz, M., "Effect of Growth Regulators on CYNODON DACTYLON (L.) Pers., SORGHUM HALEPENSE (L.) Pers., and CYPERUS ROTUNDUS L.," Weed Res. 12(1):11-20 (1972).

<5552>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: MH
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Postemergence spray (liquids) and drop-spreader granular formed; second application made if deemed necessary
EXPERIMENTAL CONDITIONS: Field study; evaluation time--4 mo with mowing at 5 to 8 day intervals
EFFECTS: Growth reduction with discoloration for 2 to 3 weeks, both temporary and resulting from a single application
COMMENTS: Proxazolon and MBR-12325 retarded growth more than the other materials; proxazolon slower acting than MBR-12325; EL-509 only material that did not significantly retard growth; 4 weeks after initial application, turf that had been significantly reduced in growth, grew faster than untreated; all materials caused an unacceptable discoloration lasting for 2 to 3 weeks; lower rates tended to cause less discoloration, but growth suppression did not last as long as higher rates
REFERENCE: Watschke, T.L., "Growth Regulation of Kentucky Bluegrass With Several Growth Retardants," Agron. J. 68(1):787-791 (1976).

<5553>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: MH
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-2)M, 10(-3)M, and 10(-4)M
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days

<5553> CONT.
EFFECTS: Complete control of shoot emergence at 10(-2) and 10(-3) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1):57-63 (1974).

<5554>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: Maleic hydrozide
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 10 and 20 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat, and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in sorghum, oat, and cucumber at 10 and 20 ppm; shoot--less than 50% inhibition in sorghum and oat at 10 ppm, less than 50% in oat at 20 ppm but 50% or greater inhibition in sorghum
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<5555>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: MH
PLANT: Water fern (AZOLLA MEXICANA)
EXPERIMENTAL DOSE: 0.0001 to 100 mg/l; K salt
APPLICATION METHODS: Intact plants floating on surface of solutions of test chemicals in Hoagland's nutrient medium with weekly solution
EXPERIMENTAL CONDITIONS: Greenhouse study; evaluation time--three wk
EFFECTS: No effect on vegetative fragmentation, reduced growth, and death at highest concentration
COMMENTS: GA inhibited natural fragmentation of water fern through prevention of or decrease in rate of senescence of older plant parts; fragmentation essentially prevented at concentration of 0.1 mg/l or higher in three-week period; inhibition of fragmentation accompanied by decreases in fresh and dry weight only at higher sub-lethal concentrations; IAA causes slight reduction in fragmentation at lower concentration but 10 mg/l increased fragmentations; fresh and dry weights not affected greatly below lethal 100 mg/l concentration
REFERENCE: Dusek, W.A. and E.K. Bonde, "Effects of Gibberellic Acid, Indoleacetic Acid, and Maleic Hydrazide on AZOLLA MEXICANA," Phyton 22(1):51-54 (1965).

<5556>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: Maleic hydrazide
PLANT: Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 1.12, 2.24, 3.36 and 4.5 kg/ha
APPLICATION METHODS: Application on established sod with a CO(2) sprayer in 336 l./ha water with 0.7% Aerosol OT surfactant (sulfosuccinic acid)
EXPERIMENTAL CONDITIONS: Four field experiments--1, 3 and 4 had 15 year old sod and # 2 had 1.5 year old sod; sod fertilized before treatment; 1.5 X 9.1 m plots in randomized complete block design with 4 replications; spring treatments--experiments 1, 3 and 4; fall treatments--experiment 2
EFFECTS: Experiment 1--1.12 kg/ha gave a significant height decrease at 27 days after application but not at 36 days, 2.24 and 4.5 kg/ha gave significant control after 36 days, all 3 rates gave a significant color change and dry matter yield reduction; experiment 2--all rates gave significant reduction in height and dry matter yield at 36 and 28 days respectively, significant color change at all rates; experiment 3--1.12, 2.24 and 4.5 kg/ha gave significant height and dry matter yield reduction at 37 and 62 days respectively, no significant color change after 58 days; experiment 4--1.12, 2.24 and 4.5 kg/ha gave significant reduction in height and dry matter yield at 37 and 61 days respectively, all 3 rates gave significant color change at 40 days
COMMENTS: Possible use in managing highway roadbanks; greenhouse studies determined chemicals for field tests
REFERENCE: Elkins, D.M. and D.L. Suttner, "Chemical Regulation of Grass Growth. I. Field and Greenhouse Studies with Tall Fescue," Agron. J. 66:487-491 (1974).

<5557>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: Maleic hydrazide
PLANT: Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1.12, 2.24, 3.36 (experiment 1 only) and 4.5 kg/ha
APPLICATION METHODS: Postemergence sprays applied with CO(2) sprayer in 356 l./ha water containing 0.7% Aerosol OT surfactant
EXPERIMENTAL CONDITIONS: Field experiments; experiment 1--1.8 X 9.0 m plots in randomized complete block design with 4 replications, fall treatment, weekly height measurements, color ratings on selected dates, 42 day duration; experiments 2 and 3--1.5 X 9.0 m plots, randomized complete block design with 4 replications, evaluations same as experiment 1, spring and fall treatments respectively
EFFECTS: Experiment 1--significant height decrease at all rates except 1.12 kg/ha, significant change in color after 19 days at all rates, significant decrease in dry matter yield at all rates after 33 days; experiment 2--significant height reduction after 35 days only at 4.5 kg/ha, significant color change after 24 days at all rates, significant reduction in dry matter yield after 49 days at 4.5 kg/ha;

<5557>
<5557> CONT.
experiment 3--significant height reduction after 36 days and significant color change after 22 days at 2.24 and 4.45 kg/ha
COMMENTS: Greenhouse experiments determined chemicals used in field tests; not recommended for lawn use
REFERENCE: Elkins, D.M., J.A. Tweedy, and D.L. Suttner, "Chemical Regulation of Grass Growth. II. Greenhouse and Field Studies with Intensively Managed Turfgrasses," Agron. J. 66:492-497 (1974).

<5558>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: MH
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bromegrass, smooth (BROMUS INERMIS); Wheatgrass, crested (AGROPYRON CRISTATUM)
EXPERIMENTAL DOSE: 6 lb/A
APPLICATION METHODS: Sprays applied to established grass stands
EXPERIMENTAL CONDITIONS: Application under actual field maintenance conditions to roadsides and median areas; attempt to reduce number of roadside mowings by herbicide application
EFFECTS: Growth reduced in all three species but more so in smooth bromegrass plants
COMMENTS: Application time very critical; application has to be uniform; number of mowings was reduced; for satisfactory roadside appearance, combination with another herbicide is essential
REFERENCE: Foote, L.E. and B.F. Himmelman, "MH as a Roadside Grass Retardant," Weed Sci. 19(1):86-90 (1971).

<5559>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: MH
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 5.6 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l/ha; 0.5% Biofilm added
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl bromide-fumigated soil (Maverly loam); evaluation times--10, 27, 34, and 41 days after spraying (phytotoxicity at 10 days and shoot numbers at other times)
EFFECTS: No adverse effects observed
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<5560>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: MH
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 5.6 kg/ha
APPLICATION METHODS: Postemergence spray; 400 l./ha
EXPERIMENTAL CONDITIONS: Pot culture outside in methyl-bromide-fumigated soil (Maverly loam); evaluation time--37 and 41 days; tubers recovered and weighed or replanted in vermiculite for further study
EFFECTS: Reduced shoot numbers, weight, and no tuber germination
COMMENTS: Nutgrass remarkably tolerant to many herbicides, but glyphosate appeared effective; no growth regulators potentially useful
REFERENCE: Hammerton, J.L., "Experiments with CYPERUS ROTUNDUS L. II. Effects of Some Herbicides and Growth Regulators," Weed Res. 15:177-183 (1975).

<5561>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: MH
PLANT: Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 1.0 and 2.0 mM
APPLICATION METHODS: Immersion in test solutions for 24 hr
EXPERIMENTAL CONDITIONS: Laboratory seed soak; seed planted in field and germination as well as mutations M(1) determined; seeds from M(1) planted and mutations M(2) determined
EFFECTS: Inhibited germination alone and induced mutations but only in conjunction with hydrazine in M(1) generation; induced mutations alone in M(2) generation
COMMENTS: Treatments administered alone or in presence of maleic hydrazide and X-rays; hydrazine produced chlorophyll mutations in M(1)-generation itself if applied alone, in a mixture, or as last treatment in sequence; in the M(2)-generation, segregation for chlorophyll mutations observed in all treatments
REFERENCE: Kak, S.N. and B.L. Kaul, "Mutagenic Activity of Hydrazine and Its Combinations With Maleic Hydrazide and X-Rays in Barley," Cytobios 12:123-128 (1975).

<5562>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: MH
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 70 lb/A; 500, 1000, and 2000 ppm
APPLICATION METHODS: Postemergence
EXPERIMENTAL CONDITIONS: Field test--initial control and regrowth studied; greenhouse study--effect on flowering studied, 2 ml solution sprayed weekly to each pot
EFFECTS: Field--1 application (70 lb/A) gave 68% initial control, 51% regrowth after three months, and numerous seedlings after 3 months, 2 applications were no more effective; greenhouse--significant reduction in flowers per plant at 500, 1000, and 2000 ppm
REFERENCE: Youngner, V.B. and J.R. Goodin, "Control of PENNISETUM CLANDESTINUM, Kikuyugrass," Weeds 9(2):238-242 (1961).

<5563>
CHEMICAL NAME: 3,6-Pyridazinedione, 1,2-dihydro-
CHEMICAL COMMON NAME: MH
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 2.0 to 8.0 gal/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate kill at highest rates with heavy regrowth (3 mo)
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<5564>
CHEMICAL NAME: 3,7-Benzofurandiol, 2,3-dihydro-2,2-dimethyl-
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 and 10.0 mM
APPLICATION METHODS: Addition to sterile solution
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated pea stem segments; radiolabeled IAA utilized
EFFECTS: Growth stimulation and inhibited IAA decarboxylation
COMMENTS: Carbofuran phenol and 3-hydroxy-carbofuran phenol found inhibitory to indole-3-acetic acid oxidase; metabolites stimulated plant growth in pea stem segment assay with low concentration of IAA
REFERENCE: Lee, T.T., "Insecticide-Plant Interaction: Carbofuran Effect on Indole-3-Acetic Acid Metabolism and Plant Growth," Life Sci. 18(2):205-210 (1976).

<5565>
CHEMICAL NAME: 3,7-Benzofurandiol, 2,3-dihydro-2,2-dimethyl-, 7-(methylcarbamate)
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 and 10.0 mM
APPLICATION METHODS: Addition to sterile solution
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated pea stem segments; radiolabeled IAA utilized
EFFECTS: No IAA decarboxylation or growth stimulation
COMMENTS: Carbofuran phenol and 3-hydroxy-carbofuran phenol found inhibitory to indole-3-acetic acid oxidase; metabolites stimulated plant growth in pea stem segment assay with low concentration of IAA
REFERENCE: Lee, T.T., "Insecticide-Plant Interaction: Carbofuran Effect on Indole-3-Acetic Acid Metabolism and Plant Growth," Life Sci. 18(2):205-210 (1976).

<5566>
CHEMICAL NAME: 3,7-cyclodecadien-1-one, 3,7-dimethyl-10-(1-methylethylidiene)-, (E,E)-
CHEMICAL COMMON NAME: Germacrone
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Growth reduction of wheat but no blockage of GA-stimulated pea growth
COMMENTS: Of 524 compounds examined, 71 were found highly active and a further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<5567>
CHEMICAL NAME: 4-Pyridinamine
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 2.0 to greater than 1.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5568>
CHEMICAL NAME: 4-Pyridinamine
PLANT: Corn (ZEA MAYS); Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.1 to 100 ppm
APPLICATION METHODS: Addition to culture solutions (Hoagland's) and to soil surface
EXPERIMENTAL CONDITIONS: Environmental chamber; photoperiod--12 hr; light intensity--26,900 lx; temperature--27 C (day) and 21 C (night); RH--40%
EFFECTS: No significant effect noted; C(14)-labelled 4-aminopyridine used to show distribution in plant; only small amounts accumulated in seed

<5568>
<5568> CONT.
COMMENTS: No visible phytotoxic effects when 1-month-old corn or sorghum seedlings grown 1 week in nutrient cultures containing 4-aminopyridine; autoradiograms of 1-month-old plants grown 1 week in treated nutrient solutions containing 4-aminopyridine revealed general distribution of radioactivity throughout plants, with higher concentrations in roots, lower stem, and leaf sections nearest stalks
REFERENCE: Starr, R.I. and D.J. Cunningham, "Phytotoxicity, Absorption, and Translocation of 4-Aminopyridine in Corn and Sorghum Growing in Treated Nutrient Cultures and Soils," J. Agric. Food Chem. 22(3):409-413 (1974).

<5569>
CHEMICAL NAME: 4-Pyridinamine, 2,3,5-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Plants
EXPERIMENTAL DOSE: 1.0 to 5.0 lb/A
APPLICATION METHODS: Postemergence spray; two applications
EXPERIMENTAL CONDITIONS: Field study, road cracks and road right-of-way
EFFECTS: Effective weed control for 12 mos
COMMENTS: Initial postpaving treatment made with beginning of growth in spring; TCA applied at rate of 24 lb/ft-mile, and subsequent applications made as needed; treatment interval about 30 days
REFERENCE: McCully, W. G., W. J. Bowmer, and A. F. Wiese, "Control of Grasses and Weeds Growing in Asphalt Pavements," PANS 16(3):497-504 (1970).

<5570>
CHEMICAL NAME: 4-Pyridinamine, 2,3,5-trichloro-
CHEMICAL COMMON NAME: Picloram, decarboxy-
PLANT: Sunflower (HELIANTHUS ANNUUS)
EXPERIMENTAL DOSE: 1.0 to 15.0 ppm
APPLICATION METHODS: Nutrient solution addition
EXPERIMENTAL CONDITIONS: Environmental chamber; nutrient solution (glass jar) culture; photoperiod--16 hr; light intensity--1800 ft candles; temperature--22 to 24 C (day) and 9-11 C (night); evaluation time--6 days
EFFECTS: 50% growth reduction of shoot fresh weight at 9.0 ppm
COMMENTS: Pichloram more phytotoxic to sunflower than three pichloram derivatives evaluated
REFERENCE: Grover, R., J.R. Gear, and R. Zerr, "Relative Phytotoxicity of Some Pichloram Derivatives," Bull. Environ. Contam. Toxicol. 14(1):721-725 (1975).

<5571>
CHEMICAL NAME: 4-Pyridinamine, 2,3,5-trichloro-
CHEMICAL COMMON NAME: Picloram
PLANT: Horehound (MARRUBIUM VULGARE)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: Postemergence spray; 25 gal/A
EXPERIMENTAL CONDITIONS: Field study; evaluation time--2.5 and 12 mos
EFFECTS: Moderate control of horehound
COMMENTS: Control of horehound plants possible with both 2,4-D and silvex
REFERENCE: Stritzke, J. F., "Germination Characteristics and Chemical Control of Horehound," J. Range Manag. 28(3):225-226 (1975).

<5572>
CHEMICAL NAME: 4-Pyridinecarboxylic acid
CHEMICAL COMMON NAME: Isonicotinic acid
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 4.1 to greater than 3.1 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Slight inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5573>
CHEMICAL NAME: 4-Pyridinol
PLANT: Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 7.0 to 1.0 (negative log) M
APPLICATION METHODS: Solution addition to seed on filter paper contained in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination; temperature--25 C; evaluation time--4 da
EFFECTS: Severe inhibition of seedling root growth
COMMENTS: Compounds with four to five substituents mostly more persistent and herbicidal than those with one or two; decomposition often slower under anaerobic than aerobic conditions; chlorination often conferred persistence and herbicidal properties, but some non-chlorinated pyridines also markedly resistant to microorganisms and harmful to lucerne; prospect of making picloram and daxtron more biodegradable by altering their substituents but retaining their herbicidal properties, seems remote.
REFERENCE: Naik, M. N., R. B. Jackson, J. Stokes, and R. J. Swaby, "Microbial Degradation and Phytotoxicity of Picloram and Other Substituted Pyridines," Soil Biol. Biochem. 4:313-323 (1972).

<5574>
CHEMICAL NAME: 4-Pyridinol, 2,3,5-trichloro-
CHEMICAL COMMON NAME: Pyriclor
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4) M
APPLICATION METHODS: Seed soaking in solutions for 24 hr. with shaking
EXPERIMENTAL CONDITIONS: Environmental chamber; temperature--24 C; in dark 6 da, then seedlings exposed to varying light intensities
EFFECTS: Inhibited carotene synthesis as well as altering other biochemical processes
COMMENTS: Amitrole, dichlormate, and pyriclor inhibited normal carotenogenesis in etiolated wheat seedlings; carotenoid precursors accumulated in treated plants; in dichlormate-treated plants, carotene accumulated, whereas phytofluene, phytoene, and carotene accumulated in amitrole-and pyriclor-treated plants
REFERENCE: Burns, E.R., G.A. Buchanan, and M.C. Carter, "Inhibition of Carotenoid Synthesis as a Mechanism of Action of Amitrole, Dichlormate, and Pyriclor," Plant Physiol. 47:144-148 (1971).

<5575>
CHEMICAL NAME: 4-Pyridinol, 2,3,5-trichloro-
CHEMICAL COMMON NAME: Pyriclor
PLANT: Couchgrass(AGROPYRON REPENS)
EXPERIMENTAL DOSE: 10(-3) M, 10(-4) M, 10(-5) M, 10(-6), and 10(-7)
APPLICATION METHODS: Solution applied to sand in which rhizome segments had been planted; solution was also nutrient (Hoagland's)
EXPERIMENTAL CONDITIONS: Greenhouse study; sand, waxed carton culture; temperature--24 C (day) and 18 C (night); evaluation times--14 and 21 days
EFFECTS: Poor control of shoot emergence at 10(-4) M
COMMENTS: Of 122 compounds evaluated, 19 found to inhibit development and emergence of couch; pronamide and TH-052-H most active
REFERENCE: Harvey, R.G. and C.R. Baker, "Influence of Herbicides on Couch Bud Development," Weed Res. 14(1): 57-63 (1974).

<5576>
CHEMICAL NAME: 4-Pyridinol, 2,3,5-trichloro-
CHEMICAL COMMON NAME: Pyriclor
PLANT: Corn (ZEA MAYS); Chickweed, common (STELLARIA MEDIA); Speedwell (VERONICA sp.); Knotweed (POLYGONUM AVICULARE); Fool's parsley (AETHUSA CYNAPIUM)
EXPERIMENTAL DOSE: 0.28 and 0.56 kg/ha
APPLICATION METHODS: Preemergence and postemergence applications with an Oxford Precision Sprayer at 2.11 kg/cm(2) pressure and 225 l./ha volume
EXPERIMENTAL CONDITIONS: Maize sown in plots of 3 rows, 3.7 m long and 61 cm apart; Oxford clay soil; hand weeded controls; weeds assessed in June for preemergence applications made on May 2 and 3 weeks after foliar treatment for postemergence applications; preemergence experiments made under wet conditions
EFFECTS: Preemergence--0.56 kg/ha gave better than 95% control of all plants but knotweed (85% control); postemergence--0.28 kg/ha gave 100% chickweed, 98% speedwell, 33% knotweed and insignificant fool's-parsley control, 0.56 kg/ha gave 100% chickweed and speedwell control, 75% knotweed and 69% fool's-parsley control; 0.56 kg/ha preemergence gave a significant maize yield reduction
COMMENTS: Postemergence applications generally less effective than preemergence treatments; results also given of effectiveness of herbicide combinations
REFERENCE: Ludwig, J.W., "The Use of a Low Dose of Atrazine Alone and in Mixtures with Other Herbicides in the Maize Crop," Weed Res. 13:12-18 (1973).

<5577>
CHEMICAL NAME: 4-Pyridinol, 2,3,5-trichloro-
CHEMICAL COMMON NAME: Pyriclor
PLANT: Plants
EXPERIMENTAL DOSE: 8.0 and 16.0 lb/A
APPLICATION METHODS: Postemergence spray; two applications
EXPERIMENTAL CONDITIONS: Field study, road cracks and road right-of-way
EFFECTS: Effective weed control for 12 mos
COMMENTS: Initial postpaving treatment made with beginning of growth in spring; TCA applied at rate of 24 lb/ft-mile, and subsequent applications made as needed; treatment interval about 30 days
REFERENCE: McCully, W. G., W. J. Bowmer, and A. F. Wiese, "Control of Grasses and Weeds Growing in Asphalt Pavements," PANS 16(3):497-504 (1970).

<5578>
CHEMICAL NAME: 4-Pyridinol, 2,3,5-trichloro-
CHEMICAL COMMON NAME: Pyriclor
PLANT: Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.5 ppmw
APPLICATION METHODS: Addition to soil
EXPERIMENTAL CONDITIONS: Laboratory study; pot culture; temperature--25 to 32 C; light intensity--500 ft C; soil--Eufala fine sand
EFFECTS: Marginal leaf chlorosis
COMMENTS: CUCUMIS SATIVA developed marginal chlorosis with fluometuron, palmate veinal chlorotic pattern with prometryne,; auxin-type manifestations of meristematic tissues with picloram, and an interveinal chlorotic pattern with pyriclor
REFERENCE: Lynd, J.W., C. Rieck, D. Barnes, D. Murray, and P.W. Santelmann, "Indicator Plant Aberrations at Threshold Soil Herbicide Levels," J. Agron. 59(1):194-196 (1967).

<5579>
<5579>
CHEMICAL NAME: 4-Pyridinol, 2,3,5-trichloro-
CHEMICAL COMMON NAME: Pyriclor
PLANT: Canarygrass, reed (PHALARIS APUNDINACEA); Quackgrass (AGROPYRON REPENS); Bromegrass, smooth (BROMUS INERMIS); Bluegrass, annual (POA ANNUA); Fescue, creeping red (FESTUCA RUBRA); Redtop (AGROSTIS ALBA)
EXPERIMENTAL DOSE: 5.6 kg/ha
APPLICATION METHODS: Postemergence spray; 374 l./ha
EXPERIMENTAL CONDITIONS: Field study; evaluation time--3 mos; weeded manually to produce uniform stands
EFFECTS: Toxic to all grasses
COMMENTS: Amitrole and dalapon combinations more toxic to reed canarygrass, smooth brome, and redtop; pyrichlor toxic to all grasses
REFERENCE: Hodgson, J.M., "Differential Response of Ditchbank Grasses to Herbicides," Weed Sci. 21(5):421-423 (1973).

<5580>
CHEMICAL NAME: 4-Pyridinol, 2,3,5-trichloro-
CHEMICAL COMMON NAME: Pyriclor
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 X 10(-4) M
APPLICATION METHODS: Immersion of seeds in test solutions for 24 hr with shaking
EXPERIMENTAL CONDITIONS: Laboratory study; seed germination at 24 C in darkness; evaluation time--6 days
EFFECTS: Inhibited carotenoid synthesis
COMMENTS: Amitrole, dichlormate, and pyriclor inhibited normal carotenogenesis; carotenoid precursors accumulated in treated plants; none interfered with protochlorophyllide synthesis or its conversion to chlorophyllide when etiolated plants were illuminated
REFERENCE: Burns, E.R., G.A. Buchanan, and M.C. Carter, "Inhibition of Carotenoid Synthesis as a Mechanism of Action of Amitrole, Dichlormate, and Pyriclor," Plant Physiol. 47:144-148 (1971).

<5581>
CHEMICAL NAME: 4-Pyridinol, 2,3,5-trichloro-
CHEMICAL COMMON NAME: Pyriclor
PLANT: Witchweed (STRIGA LUTEA); Crabgrass, large (DIGITARIA SANGUINALIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tobacco (NICOTIANA sp.); Peanut (ARACHIS HYPOGAEA); Potato (SOLANUM TUBEROSUM); Cotton (GOSSYPIUM HIRSUTUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Goosegrass (ELEUSINE INDICA); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.07, 0.14, 0.28, 0.56, 1.12, 2.24, and 4.48 kg/ha
APPLICATION METHODS: Postemergence spray; directed; acetone and water mixed 1:2; 0.5% polyoxyethylene sorbitan monolanreate surfactant (non-ionic); posttransplant and preplant sprays also
EXPERIMENTAL CONDITIONS: Greenhouse study--pot culture in sand (Lakeland); field studies--Klej sandy loam
EFFECTS: Effective control of weeds indicated at 0.56 to 2.24 kg/ha and higher with little or no damage to crop plants (excepting tomato, egg plant, and bell pepper)
COMMENTS: Postemergence directed application of pyriclor gave control of witchweed equivalent to 2.24 kg/ha of 2,4-D without injuring corn; pyriclor applied to the soil surface or incorporated did not significantly injure tobacco at rates of 2.24 kg/ha and less; peanut not injured by pyriclor incorporated in soil; Irish potato slightly injured.
REFERENCE: Dale, J.E., "Selectivity of Pyriclor on Witchweed, Tobacco, and Other Plants," Weed Sci. 19(1):90-93 (1971).

<5582>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-bis[2-(diethylamino)-2-oxoethyl]-, dichloride
CHEMICAL COMMON NAME: PP-831
PLANT: Clover, white (TRIFOLIUM REPENS); Chickweed, mouse-ear (CERASTIUM VISCOSUM); Dandelion, common (TARAXACUM OFFICINALE)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Foliar spray; 50 gal/A at 25 psi
EXPERIMENTAL CONDITIONS: Field study; time period--1974 and 1975; soil--Bridgehampton silt loam
EFFECTS: Effective weed control except for dandelion (no effect)
COMMENTS: Variable control of dandelion observed with all applications of 2,4-D; combinations of 2,4-D with one or more herbicides -- dicamba, mecoprop or silvex -- provided good broad spectrum control and in certain cases greater than 90 percent control; a newer material RO-7-6145 gave good control of chickweed and dandelion; PP-831 provided better than 90 percent control of clover and chickweed
REFERENCE: Jagschitz, J.A. and L.H. Barrett, "Chemical Control of Broadleaved Weeds in Cool Season Turfgrasses," Proc. N.E. Weed Sci. Soc. 30:385-388 (1976).

<5583>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Parsley-piert (ALCHEMILLA MICROCORPA);Henbit (LAMIUM AMPLEXICAULE);Chickweed, common (STELLARIA MEDIA);Speedwell, corn (VERONICA ARVENSIS);Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 0.6 kg/ha
APPLICATION METHODS: Postemergence spray; 376 l./ha; surfactant--0.5%
EXPERIMENTAL CONDITIONS: Field study; 3 locations in GA; time period--1972-1974; evaluation time--42 to 85 days; bermudagrass dormant when sprayed
EFFECTS: Effective Control of all weeds but 2 applications required; no adverse effect of greening of bermudagrass
COMMENTS: Herbicides controlled all weed species with single application; most herbicides had less activity on parsley-piert and corn speedwell than on henbit and common chickweed; single applications of either cisanilide or methazole gave excellent parsley-piert controll; paraquat satisfactorily controlled more weed species with a single application than any other herbicide treatment
REFERENCE: Johnson, B.J., "Broadleaf Weed Control in Dormant Bermudagrass Turf," Agron. J. 67(1):689-692 (1975).

<5584>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Clover, white (TRIFOLIUM REPENS); Wheat (TRITICUM AESTIVUM); Cucumber (CUCUMIS SATIVUS); Carrot (DAUCUS CAROTA); Celery (APIUM GRAVEOLENS); Lettuce (LACTUCA SATIVA); Turnip (BRASSICA RAPA)
EXPERIMENTAL DOSE: 0.5, 1.0, and 1.5 ppm
APPLICATION METHODS: Soil drench application by means of nested pots
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture; soil--acid washed, coarse quartz sand; evaluation time--21 days; pre-germination at 22 C prior to planting; daily test solution replacement; moved daily to minimize local variations in temperature, etc.; temperature 18-20 C; follow-on soil assays
EFFECTS: Fresh weight of plants reduced 50% at concentrations ranging from 0.67 to 1.50 ppm paraquat; ryegrass, lettuce, and carrots most sensitive plants; clover least sensitive of 8 plants tested
COMMENTS: Lettuce and ryegrass most suitable species for bioassay purposes; greater inhibition in root growth occurred compared to shoot growth
REFERENCE: Damanakis, M., D.S.H. Drennan, J.D. Fryer, and K. Holly, "The Toxicity of Paraquat to a Range of Species Following Uptake by the Roots," Weed Res. 10(3):278-283 (1970)

<5585>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Sugarcane (SACCHARUM sp.)
EXPERIMENTAL DOSE: 1.0 and 2.0 pt/A
APPLICATION METHODS: Postemergence spray; 10 and 20 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effect
COMMENTS: Karmex-2,4-D ester appeared to cause depression in cane yields but compensated for this by an improvement in juice quality; overall improvement in cane yields and juice quality resulting from Gesapax-Actril-D treatment quite noticeable as it outyielded all others; only Daconate seemed to result in noticeable sugar yield depression primarily because of its adverse effect on juice quality; dalapon and gramoxone in combination with 2,4-D ester did not seriously affect yields
REFERENCE: Maddan, W.L. and E.M. Christie, "Weed Control at Monymusk," Jamaican Assoc. Sugar Tech. 33:76-82 (1972).

<5586>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Hibiscus (HIBISCUS ROSA)
EXPERIMENTAL DOSE: 0.3 to 7,560 micro g/leaf
APPLICATION METHODS: Applied as droplets to leaves with micropipette
EXPERIMENTAL CONDITIONS: Field study (hibiscus and guava); greenhouse study (sorghum and cotton)
EFFECTS: Leaf kill at 19 micro g/leaf within 7 days
COMMENTS: Pentachlorophenol and AP-20 produced most rapid desiccation at high dosages; usually as effective as PCP and AP-20 within 1 to 2 days after treatment, and produced more extensive desiccation at lower dosages, especially on hibiscus, sorghum, and cotton; diquat, paraquat, cacodylic acid, and AP-20 produced complete defloiation of hibiscus within 5 days after treatment but diquat and paraquat were more effective at lower dosages than other defoliants; diquat completely defoliated hibiscus regardless of placement on leaf, but higher dosages required for effective desiccation when applied non-uniformly over leaf
REFERENCE: Bovey, R.W. and F.R. Miller, "Desiccation and Defoliation of Plants by Different Herbicides and Mixtures," Agron. J. 60(1):700-702 (1968).

<5587>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Apple (PYRUS MALUS); Fescue, creeping red (FESTUCA RUBRA); Quackgrass (AGROPYRON REPENS); Bluegrass, annual (POA ANNUA); Orchard grass (DACTYLIS GLOMERATA); Crabgrass, large (DIGITARIA SANGUINALIS); Milkweed (ASCLEPIAS SYRIACA); Goldenrod (SOLIDAGO CANADENSIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Lamb's-quarters (CHENOPODIUM ALBUM)
EXPERIMENTAL DOSE: 1 lb/A
APPLICATION METHODS: Postemergence spray application delivered at 35 gal/A in April or early May
EXPERIMENTAL CONDITIONS: 2 apple orchards--trees 3 years old at start of experiment; 1 row = 1 herbicide treatment; 36 sq. ft. area treated around each free; weed control and apple tree injury ratings made June 20 and September 20 for 10 consecutive years
EFFECTS: First orchard--approximately 85% broadleaf and grass weed control June 20, 25% broadleaf control and no grass control recorded September 20; second orchard--about 85% broadleaf and grass control June 20, about 30% broadleaf and no grass control by September 20; no injury to apple trees
COMMENTS: Results reported represent 10 year summary; chemical weed control practical and safe for use in apple orchards; to reduce chance of apple tree injury, alternate herbicide treatment every other year; combinations of herbicides more effective than single herbicides except dichlobenil
REFERENCE: Langer, C.A., W.H. Smith, and G. Gebe, "Ten Consecutive Years of Weed Control in Each of Two Separate Apple Orchards in New Hampshire," Proc. Northeast. Weed Sci. Soc. 27:257-261 (1973).

<5588>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Cucumber (CUCUMIS SATIVUS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Galinsoga (GALINSOGA PARVIFLORA); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Pigweed, prostrate (AMARANTHUS BLITOIDES); Foxtail, giant (SETARIA FABERI); Purslane, common (PORTULACA OLERACEA); Lamb's-quarters (CHENOPODIUM ALBUM); Foxtail, green (SETARIA VIRIDIS)
EXPERIMENTAL DOSE: 3 lb/A
APPLICATION METHODS: Preemergence

<5588>
<5588> CONT.
EXPERIMENTAL CONDITIONS: Murrill loam; fall plowing, seedbed preparation the following May 28; cucumber planted 12 days later on June 10; herbicides applied 1 day after planting; single row plots 5 by 36 ft
EFFECTS: Good weed control, minor cucumber injury; best results at 2 lb/A
COMMENTS: One of the most promising herbicides tested; paraquat in combination with napthalam also tested
REFERENCE: Noll, C.J., "Herbicide Weeding of Cucumber Grown in a Stale Seed Bed," Proc. Northeast. Weed Sci. Soc. 29:262-263 (1975).

<5589>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Grasses; Bahiagrass (PASPALUM NOTATUM)
EXPERIMENTAL DOSE: 0.5 lb/A (2 or 4 applications)
APPLICATION METHODS: Postemergence spray; 37-50 gal/A
EXPERIMENTAL CONDITIONS: Field study; 3 locations (FL); time period--1971 and 1972; evaluation time--8 to 26 wks
EFFECTS: Slight to moderate control of grass weeds
COMMENTS: Combinations of diuron or simazine plus 2 applications of dalapon, 2 applications of dalapon alone or single applications of glyphosate provided best grass control; in addition, bahiagrass controlled with oxadiazon and asulam
REFERENCE: Arnold, C.E. and J.B. Aitken, "Perennial Grass Control in Pecan Orchards," Proc. South. Weed Sci. Soc. 26:231-235 (1973).

<5590>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Plants; Peach (PRUNUS PERSICA)
EXPERIMENTAL DOSE: 0.6 kg/ha
APPLICATION METHODS: Sprayed as seedlings were emerging or on scions; 460 or 900 l./ha
EXPERIMENTAL CONDITIONS: Field study; soil--Berrian fine sandy loam; periodic cultivation and weeding as needed; time period--1969 and 1970
EFFECTS: Moderate control of weeds with no adverse effect on peach seedlings
COMMENTS: Problem of weed populations that emerge before and with peaches eliminated by all terbacil rates and reduced by simazine; the herbicides as supplement to cultivation did no adversely affect emergence or final stand of budded seedlings in first year, or growth from scion buds in next year; size attained by seedlings and by scion growth under herbicides equal or greater than that under cultivation alone
REFERENCE: Curtis, O.F., "Weed Control in Peach Nurseries with Terbacil," Proc. Northeast. Weed Sci. Soc. 28:213-218 (1974).

<5591>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Pigweed, redroot (AMARANTHUS RETROFLEXUS); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Hop, common (HUMULUS LUPULUS)
EXPERIMENTAL DOSE: 1.1, 2.2, and 4.5 kg/ha
APPLICATION METHODS: Postemergence applications at (1) growth stage 1, 3.7 to 5.0 m fall plants (2) growth stage 2, 5.5 m plants and (3) growth 3, medium cone stage; sprays applied in 935 l/ha water, non-ionic surfactant X-77 added at rate of 0.13% (v/v)
EXPERIMENTAL CONDITIONS: 2 year field experiments; 0.8 by 10.7 m plots, 5 hop plants in each plot; 2 replications, randomized complete block design; 2 test sites, Moxee (treatments applied to same plots both years) and Prosser (plots were in different hopyard each year), Washington
EFFECTS: Weeds controlled, no hop yield reduction
COMMENTS: 3 applications required to control weeds until harvest; 2 applications controlled hop sucker growth
REFERENCE: Ogg, A.G. Jr. and C.E. Zimmermann, "Effects of Paraquat and Dinoseb in Hops," Weed Sci. 24(5):493-495 (1976).

<5592>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Cucumber (CUCUMIS SATIVUS); Grasses; Purslane, common (PORTULACA OLERACEA); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Tumbleweed (AMARANTHUS ALBUS)
EXPERIMENTAL DOSE: 2 and 3 lb/A
APPLICATION METHODS: Preemergence treatments 1 day after planting
EXPERIMENTAL CONDITIONS: Hagerstown silt loam; fall plowing, seedbed prepared June of following year; single row plots, 5 by 36 ft; plots seeded 13 days after seedbed preparation; plots harvested 2.5 months after planting
EFFECTS: Minor cucumber injury, good weed control; 2 lb/A gave slightly better control than 3 lb/A of all but grasses
COMMENTS: Paraquat in combination with other herbicides also reported
REFERENCE: Noll, C.J., "Weed Control in Cucumbers in a Conventional Planting and in a Stale Seed Bed," Proc. Northeast. Weed Sci. Soc. 31:248-251 (1977).

<5593>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Sorghum (SORGHUM BICOLOR); Pea, cow- (VIGNA UNQUICULATA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1.4, 2.8, 5.6, 11.2 and 22.4 ug/plant
APPLICATION METHODS: Formulation--dichloride, 0.91 kg/3.79 l.; herbicide solution in water containing 0.5% (V/V) X-77 as surfactant applied on plants
EXPERIMENTAL CONDITIONS: Cowpea plants 10 to 12 days old when treated and sorghum plants were 25 to 28 days

<5593> CONT.
old; cowpea leaves treated by depositing 0.1 ml herbicide solution on upper surface, 0.1 ml deposited in partially expanded second true leaf of sorghum; 0.1 ml applied to hypocotyl of cowpea in other tests; germination effects determined by soaking seeds in 10(-7), 10(-6), 10(-5), 10(-4) and 10(-3)M aqueous solutions for 2, 4, and 8 hours, after treatment, seeds washed with 35 ml distilled water--effects recorded for wheat as well as other plants
EFFECTS: Growth stimulation of cowpea at 1.4 and 2.8 ug, inhibition at other rates (40% at 11.2 and 80% at 22.4 ug); sorghum growth inhibition at all rates, about 40% at 1.4 ug and about 75% at 22.4 ug/plant; 10% cowpea kill at 2.8 ug and 90% at 22.4 ug; 25% sorghum desiccation at 1.4 ug, 85% at 5.6 ug and 100% at 22.4 ug; germination inhibited in sorghum, cowpea and wheat; at 2 hr exposure, stimulation of wheat observed at 10(-4)M and less concentrations
COMMENTS: Sorghum seedlings more sensitive than cowpea seedlings
REFERENCE: Baur, J.R. and R.W. Bovey, "Herbicidal Effects of Tebuthiuron and Glyphosate," Agron. J. 67:547-553 (1975).

<5594>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Peach (PRUNUS PERSICA); Quackgrass (AGROPYRON REPENS); Bluegrass, Kentucky (POA PRATENSIS)
EXPERIMENTAL DOSE: 1121 g cation/ha
APPLICATION METHODS: May application with 11.4 l. compressed air sprayer
EXPERIMENTAL CONDITIONS: Experiments 6 years in duration; peach trees 2 years old at start of experiments; Gloucester loam soil; 5 experiments--(1) hay mulch, 18 kg/tree, (2) mowing, (3) paraquat applied in May and July, (4) paraquat plus simazine (3587g/ha WP) applied in May and (5) May and July cultivation to 8 to 10 cm depth
EFFECTS: Paraquat gave good weed control all but year 5; control was comparable to cultivation and in year 6 was considerably better; paraquat treatment gave better control than hay mulch and somewhat better control than paraquat plus simazine; no apparent phytotoxicity to peach trees
COMMENTS: Hay mulched trees--higher leaf potassium, lower leaf magnesium
REFERENCE: Lord, W.J. and E. Vlach, "Responses of Peach Trees to Herbicides, Mulch, Mowing, and Cultivation," Weed Sci. 21(3):227-229 (1973).

<5595>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Clover, Egyptian (TRIFOLIUM ALEXANDRINUM); Plants
EXPERIMENTAL DOSE: 1.0 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; time period--1973 and 1974
EFFECTS: Moderate weed control and reduce yield of berseem
COMMENTS: Stale seed-bed prepared by desiccation of weed seedlings with paraquat day before planting berseem and pre-planting incorporation of EPTC both effective in significantly reducing weed growth and boosting yields of berseem; berseem seeds coated with activated carbon before planting provided appreciated protection to corp against EPTC, but NA stunted berseem growth
REFERENCE: Gupta, O.P. and N.M. Bacchawat, "Weed Control in Berseem Using Stale Seed-Bed, EPTC, and MCPB," PANS 22(3):386-390 (1976).

<5596>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Iris (IRIS sp.); Orange, navel (BREVIPALPUS CALIFORNICUS); Arborvitae, Nare's (THUJA OCCIDENTALIS); False cyprus, goldplume (CHAMAECYPARIS PISIFERA); Juniper, Savin (JUNIPERUS SABINA); Sedge (CYPERUS sp.); Thatch (IMPERTA CYLINDRICA); Thatch (ARUNDINELLA BENGALENSIS); Bermudagrass, common (CYNODON DACTYLON); Panicum (PANICUM ANTIDOTALE); Cutgrass (LEERSIA HEXANDRA); Panikotali (HYGRORYZA ARISTATA); Khorihadol (ECHINOCHLOA COLONUM); (POGONATHERUM CRINITUM); Ronga banspatia (PASPALUM SCROBICULATUM); Samsolokh (EUPATORIUM ODORATUM); Chickweed (AGERATUM CONYZOIDES); Mile-a-minute (MIKANIA MICRANTHA); Bagrahote (BORRERIA HISPIDA); Madhusoleng (POLYGONUM CHINENSE); Smartweed, common (POLYGONUM HYDROPIPER); Tearthumb (POLYGONUM PERFOLIATUM)
EXPERIMENTAL DOSE: 2.0 l./ha
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Moderate to effective control of most species but duration is relatively short
COMMENTS: Most effective herbicides applied singly were paraquat and 2,4-D; combined herbicide applications (dalapon, paraquat, 2,4-D, Ansar-31, and amitrol) equally or more effective
REFERENCE: Barboa, B.C., "Chemical Control of Weeds in Drains, Drain Sides, and Other Non-Tea Pockets," Two Bud 19(1):25-28 (1972).

<5597>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Soybean (GLYCINE MAX); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Panicum, fall (PANICUM DICHOTOMIFLORUM)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A; WS
APPLICATION METHODS: Postemergence spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; soil--Freehold loam; soybeans planted with no tillage in wheat stubble; evaluation time--1 mo; soybeans planted one day before herbicide applications
EFFECTS: At 1.0 lb/A, effective control of weeds with slight vigor and stand reduction of soybean
COMMENTS: Only paraquat and glyphosate applied alone gave good weed control; Paraquat and metribuzin reduced soybean stands but not seriously; alachlor and penoxalin did not control panicum; penoxalin or linuron in combination with glyphosate or paraquat improved control of many weed species over penoxalin and linuron applied alone; combinations of the two with either of the contact herbicides (3-way combinations) did not improve degree of control effected by single herbicides applied with paraquat or glyphosate; combinations

<5597>
<5597> CONT.
of RH-2915 and alachlor did not improve weed control over either herbicide applied alone; considerable improvement resulted when glyphosate or paraquat added to the combination
REFERENCE: Michieka, R.W., R.D. Ilnicki, and J.R. Justin, "Weed Control in Double-Crop Soybeans with Herbicides Applied Alone and in Combination with Paraquat or Glyphosate," Proc. Northeast. Weed Sci. Soc. 31:61-69 (1977).

<5598>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Fescue, creeping red (FESTUCA RUBRA); Bluegrass, Kentucky (POA PRATENSIS); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 2.2 kg/ha
APPLICATION METHODS: Laboratory sprayer at a volume of 374 l./ha
EXPERIMENTAL CONDITIONS: 7.6 cm plastic pots, sandy loam soil at pH 6.2; greenhouse study; applications made before seeding and directly over seeds
EFFECTS: Seedling establishment of 4% or less when paraquat applied on seeds; clippings from turf treated with paraquat reduced germination--bluegrass 5%, red fescue 14% and tall fescue 31%
COMMENTS: Clippings of treated grass added to simulate natural cover when turf is sprayed in the field
REFERENCE: Klingman, D.L. and J.J. Murray, "Germination of Seeds of Turfgrasses as Affected by Glyphosate and Paraquat," Weed Sci. 24(2):191-193

<5599>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Cogongrass (IMPERATA CYLINDRICA)
EXPERIMENTAL DOSE: 0.56, 1.12, and 2.24 kg/ha
APPLICATION METHODS: Postemergence spray; 300 l./ha; 0.5% surfactant; application repeated 2x or 5x
EXPERIMENTAL CONDITIONS: Field study; pure cogongrass stands in near-dormant state; time period--1971 and 1972
EFFECTS: Effective control only when 5X applications made but only in some cases; moderate control usually; moderate control after one year (5X applications)
COMMENTS: All soil sterilants provided acceptable control; single applications of TCA and dalapon controlled cogongrass without prolonged soil sterility
REFERENCE: Dickens, R. and G.A. Buchanan, "Control of Cogongrass with Herbicides," Weed Sci. 23(3):194-197 (1975).

<5600>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Bermudagrass, common (CYNODON DACTYLON); Bluegrass, annual (POA ANNUA); Parsley-piert (ALCHEMILLA MICROCORPA); Speedwell, corn (VERONICA ARVENSIS); Henbit (LAMIUM AMPLEXICAULE); Chickweed, common (STELLARIA MEDIA)
EXPERIMENTAL DOSE: 0.6 kg/ha
APPLICATION METHODS: Postemergence spray; 375 l./ha; one or two applications
EXPERIMENTAL CONDITIONS: Field study; three locations; 2 years; applications made in January or February when bermudagrass was dormant
EFFECTS: Effective control of all weeds with double application; single application was less effective on parsley-piert, corn speedwell, and henbit; no adverse effect on bermudagrass
COMMENTS: Glyphosate gave good to excellent control of several winter annuals; the combination treatment of 2,4-D + mecoprop + dicamba gave inconsistent weed control for all winter annuals evaluated except common chickweed; control of annual bluegrass and common chickweed was equal when treated with either paraquat or glyphosate
REFERENCE: Johnson, B.J., "Glyphosate for Weed Control in Dormant Bermudagrass," Weed Sci. 24(1):140-143 (1976).

<5601>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Larkspur, geyer (DELPHINIUM GEYERI); Ladysthumb (POLYGONUM PERSICARIA); Greenflower pepperweed (LEPIDIUM DENSIFLORUM); Onion, textile (ALLIUM TEXTILE); Biscuitroot, white (CYMOPTERUS ACAULIS); Globemallow, scarlet (SPHAERALCEA COCCINEA); Needle-and-thread (STIPA COMATA); Bluegrass, sandberg (POA SECUNDA); Bladderpod (LESQUERELLA MACROCARPA); Pricklypear, plains (OPUNTIA POLYACENTHA); Dock, veiny (RUMEX VENOSUS); Wheatgrass, western (AGROPYRON SMITHII); Grama, blue (BOUTELOUA GRACILIS); Sedge, sun (CAREX HELIOPHILA); June-grass (KOELERIA CRISTATA); Sagebrush, fringed (ARTEMSIA FRIGIDA); Bluebell (MERTENSIA LANCEOLATA); Buckwheat, woody (ERIOGONIUM EFFUSUM); Starlily, common (LEUCOCRINUM MONTANUM); Milkvetch, Drummond (ASTRAGALUS DRUMMONDII); Gaura, scarlet (GAURA COCCINEA); Peavine, showy (LATHYRUS POLYMORPHUS); Primrose, evening (OENOTHERA CORONOPIFOLIA)
EXPERIMENTAL DOSE: 0.25, 0.50, and 0.75 lb/A
APPLICATION METHODS: Postemergence spray; 20 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of geyer larkspur at 0.5 and 0.75 lb/A with moderate control at 0.25 lb/A; repeated annual treatment probably needed for continuing control and prevention of cattle poisoning
COMMENTS: Variety of other plants evaluated; textile onion effectively controlled; sandberg bluegrass and white biscuitroot poorly or moderate controlled; several plants stimulated (slimleaf goosefoot, greenflower pepperweed, scarlet globemallow, and needle and thread); numerous plants resistent
REFERENCE: Hyder, D.N., "Paraquat Kills Geyer Larkspur," Range Manag. 25(6):460-463 (1972).

<5602>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Broadleaf weeds; Grasses; Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 1.0 lb/A
APPLICATION METHODS: Postemergence spray; 35 gal/A; dichlorobenil was a 4% G formulation
EXPERIMENTAL CONDITIONS: Field study; orchards in two locations; three varieties of apples; time period--1963 to 1972
EFFECTS: Moderate control initially of all weeds but not persistent with no adverse effect on apples
COMMENTS: All chemicals effective, but combinations gave more complete control of all weeds; several weeds gave slight problems in spots once the main weed competition killed out
REFERENCE: Langer, C.A., W.H. Smith, and G. Gebe, "Ten Consecutive Years of Weed Control in Each of Two Separate Apple Orchards in New Hampshire," Proc. Northeast. Weed Sci. Soc. 27:257-261 (1973).

<5603>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Bermudagrass, common (CYNODON DACTYLON)
EXPERIMENTAL DOSE: 60 and 120 g/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Reduced yield following first mowing (one wk) but increase yield at second and subsequent mowings
COMMENTS: Coastal bermudagrass up to 4 metric tons/ha effctively desiccated with paraquat; quality of Coastal hay desiccated with paraquat decreased by more than 20% within 1 week after treatment, indicating that this is not a practical means of providing cured forage IN SITU in the humid southeastern United States
REFERENCE: Monson, W.G., "Effects of Paraquat on Yield and Quality of Coastal Bermudagrass, Agron. J. 69(2):323-324 (1977).

<5604>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 1.0 and 1.5 ppmw
APPLICATION METHODS: Injected under surface of water by spray nozzle at 120 psi
EXPERIMENTAL CONDITIONS: Field study; naiads growing in 2 locations in FL; time period--1960 to 1962
EFFECTS: Effective control of naiad at all rates for up to 16 wk
COMMENTS: Most promising of 13 herbicides for control of southern naiad were acrolein, endothall, diquat, and paraquat; acrolein and endothall gave most rapid kill of southern naiad but retreatment necessary at end of 16 weeks
REFERENCE: Blackburn, R.D. and L.W. Weldon, "Control of Southern Naiad in Florida Drainage and Irrigation Channels," Weeds 12(4):295-298 (1964).

<5605>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Willow (SALIX sp.); Grape (VITIS VINIFERA); Eucalyptus, red gum (EUCALYPTUS CAMALDULENSIS)
EXPERIMENTAL DOSE: 10 and 100 mg/l.
APPLICATION METHODS: Exposed plant roots placed in 1.0 liter herbicide solution for 1 hr; water soluble concentrate formulation
EXPERIMENTAL CONDITIONS: Pot studies; plastic pot (holes in bottom) with plant placed on top of another pot containing soil; after root growth through holes into second pot, plants carefully removed and placed on top of pot containing herbicide solution; 1-hr herbicide exposure
EFFECTS: Willow--10 mg/l. killed roots with some systemic injury; grape--100 mg/l. completely killed roots with slight to moderate systemic foliage injury; eucalyptus--100 mg/l. caused systemic foliage injury without completely killing lower roots
REFERENCE: Ahrens, J.F., O.A. Leonard, and N.R. Townley, "Chemical Control of Tree Roots in Sewer Lines," J. Water Pollut. Control Fed. 42(9):1643-1655 (1970).

<5606>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Quackgrass (AGROPYRON REPENS); Orchard grass (DACTYLIS GLOMERATA); Bluegrass, Kentucky (POA PRATENSIS); Dandelion, common (TARAXACUM OFFICINALE); Crabgrass, large (DIGITARIA SANGUINALIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: Postemergence in water at 40 gpa
EXPERIMENTAL CONDITIONS: Woodbridge fine sandy loam; 2 tons/A lime and 800 lb/A 15-15-15 fertilizer applied April 17, corn seeded May 22; 9 by 30 ft plot; herbicide treatments April 24 when grass growth just starting and May 27 when grass was 10 to 12 inches tall; field experiments; above average rainfall
EFFECTS: Poor control of all plants at both rates and application dates except dandelion at 1.0 lb/A applied May 27 (moderate control); corn yields better than unweeded control but less than with glyphosate
COMMENTS: 3 treatments gave apparent control of crabgrass, but control associated with continuing competition of perennial sod; no reported corn injury; combinations with other herbicides also tested
REFERENCE: Peters, R.A. and W.M. Dest, "Glyphosate for Perennial Sod Kill in No-Tillage Corn," Proc. Northeast. Weed Sci. Soc. 27:1-6 (1973).

<5607>
<5607>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Rye (SECALE CEREALE); Nutsedge, yellow (CYPERUS ESCULENTUS); Panicum, fall (PANICUM DICHOTOMIFLORUM); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 0.25 lb/A
APPLICATION METHODS: Treatments within 3 days of planting at 30 gpa
EXPERIMENTAL CONDITIONS: Beltsville silt loam; no tillage field experiments--rye cover crop and corn; randomized complete block design with 4 replications; corn planting dates--April 23, 1974, May 9, 1975, and April 26, 1976
EFFECTS: 1975--unacceptable nutsedge and panicum control, no corn injury; 1976--80% rye kill, acceptable panicum control
COMMENTS: Combinations of herbicides also tested
REFERENCE: Parochetti, J.V. and A.W. Bell, "Residual Herbicides on No-Tillage Corn in a Rye Cover Crop," Proc. Northeast. Weed Sci. Soc. 31:24-29 (1977).

<5608>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Panicum, fall (PANICUM DICHOTOMIFLORUM); Smartweed, Pennsylvania (POLYGONUM PENSYLVANICUM); Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Horseweed (CONYZA CANADENSIS); Foxtail, green (SETARIA VIRIDIS); Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Preemergence and postemergence treatments at 30 gpa
EXPERIMENTAL CONDITIONS: Mattapeake silt loam; field experiments, 1974 to 1976; 10 by 20 ft plots, randomized complete block design with 4 replications; visual ratings; soybeans planted after barley harvest--double cropping, no-tillage soybeans; June 10 soybean planting
EFFECTS: Excellent control of panicum, ragweed, and horseweed on August 2; smartweed control excellent on June 25 but barely acceptable on August 2; unacceptable foxtail control in all but 1976 where barely acceptable; no soybean injury first year, minor injury in 1975 and 1976
COMMENTS: All weeds except foxtail present at time of soybean planting and herbicide application; combinations with other herbicides also tested
REFERENCE: Parochetti, J.V., "Herbicides for No-Tillage Double Cropped Soybeans," Proc. Northeast. Weed Sci. Soc. 31:54-60 (1977).

<5609>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Hyacinth, water (EICHHORNIA HASTAEFOLIA)
EXPERIMENTAL DOSE: 7.0 l./ha
APPLICATION METHODS: Addition to water
EXPERIMENTAL CONDITIONS: Field study; evaluation time--2 and 6 wk
EFFECTS: Effective control
COMMENTS: Complete control of water hyacinth obtained with diquat and paraquat with no further regeneration; partial control obtained with cyanazine and 2,4-D while TCA proved non-effective against water hyacinth
REFERENCE: Patro, G.K. and G.C. Tosh, "Studies on Control of Water Hyacinth (EICHHORNIA CRASSIPES) by Herbicides," Andhra Agric. J. 18(4):139-143 (1971).

<5610>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Barleygrass (HORDEUM LEPORINUM); Clover, subterranean (TRIFOLIUM SUBTERRANEUM)
EXPERIMENTAL DOSE: 0.25, 0.50, and 1.00 lb/A
APPLICATION METHODS: Foliar spray; 80 gal/A
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Effective control of barleygrass at 1.0 lb/A with no adverse effect on clover
COMMENTS: Subterranean clover much more susceptible than white clover to 2,2-DPA; in autumn, following treatment with 2,2-DPA, 16 clover seedlings per square link recorded; white clover more tolerant of 2,2-DPA although yields significantly reduced by 2 lb an acre
REFERENCE: Squires, V.R., "Herbicides for the Selective Control of Barley Grass in Irrigated Clover Pastures," Australian J. Exp. Ag. 3(8):35-38 (1963).

<5611>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Grasses; Clover (TRIFOLIUM sp.)
EXPERIMENTAL DOSE: 0.5 lb/A
APPLICATION METHODS: Foliar spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; 10 locations in England
EFFECTS: Moderate to effective control of grass weeds with no adverse effect on clover and improved seed yield
COMMENTS: Value of using 2.1 lb/A, carbetamide for eliminating grass weeds in clover crops to give improved seed yield confirmed; dose of about 1.4 lb/A showed promise for regulation of grasses in clover seed crops
REFERENCE: Soper, D. and A.S. Hutchison, "The Regulation of Grasses in Clover Seed Crops and Pasture Using Carbetamide," Proc. 12th British Weed Cont. Conf. 2:779-786 (1974).

<5612>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Waterweed (ELODEA CANADENSIS); Naiad, Southern (NAJAS GUADALUPENSIS); Coontail (CERATOPHYLLUM DEMERSUM); Lettuce, water (PISTIA STRATIOTES); Hyacinth, water (EICHHORNIA HASTAEFOLIA); Salvinia (SALVINIA ROTUNDIFOLIA); Alligatorweed
EXPERIMENTAL DOSE: 1.0 to 10.0 ppm (submersed weeds); 1.0 to 10 lb/A (floating weeds); 5 and 20 lb/A (alligatorweed)
APPLICATION METHODS: Addition by syringe to water containing test species (submersed species) and spray (100 gal/A at 20 psi)
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--80 F; light intensity--60 to 80 ft c; photoperiod--10 hr; evaluation time--2 to 8 wk with continuous and varied (0.5 to 336 hr) contact
EFFECTS: At 5.0 and 20.0 lb rate, effective weed control
COMMENTS: Among 75 herbicides evaluated on three species of submersed weeds only diquat, endothal, and acrolein gave 85% or better control at 1 ppmw in still-water tests; only acrolein and endothal effective on submersed weeds at 1 ppmw in limited-exposure test; evaluation of 17 herbicides on three species of floating aquatic weeds indicated diquat effective
REFERENCE: Blackburn, R.D., "Evaluating Herbicides Against Aquatic Weeds," Weeds 11(1):21-24 (1963).

<5613>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Carrot (DAUCUS CAROTA); Onion (ALLIUM CEPA); Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 1.12 kg/ha
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Field study; irrigation
EFFECTS: No adverse effect on crop plants investigated
COMMENTS: Paraquat safe to apply as contact pre-emergence treatment on peat soils for direct seeded vegetable crops sown 10 mm or more below surface; damage also unlikely even if crop is at point of emergence at time of spraying; risk of damage through leaching of paraquat following heavy rainfall after application also remote
REFERENCE: Cassidy, J.C., "Weed Control in Vegetables on Peat Soils," Scien. Hort. 24:68-72 (1972).

<5614>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Velvetgrass (HOLCUS LANATUS); Timothy (PHLEUM PRATENSE)
EXPERIMENTAL DOSE: 0.09, 0.18, and 0.36 kg/ha
APPLICATION METHODS: Postemergence spray; 450 l./ha; Oxford precision sprayer--'0' size nozzle
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: At 0.36 kg/ha, moderate damage to timothy and moderate control of HOLCUS
COMMENTS: Linuron proved most successful in controlling HOLCUS; gave highest yields of timothy at hay cut and heaviest individual seed heads; glyphosate particularly severe on timothy growth; asulam offered reasonable degree of control at a high rate of spraying
REFERENCE: Harkess, R.D. and R.A. Hope, "The Control of Yorkshire Fog (HOLCUS LANATUS L.) in Timothy Swards," Proc. 12th. Br. Weed Cont. Conf. 2:733-736 (1974).

<5615>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Nutsedge, purple (CYPERUS ROTUNDUS)
EXPERIMENTAL DOSE: 0.2 and 0.4 kg/ha
APPLICATION METHODS: Immersion of tubers for 24 hr in test solutions and foliar spray or drench of intact plants (selected chemicals)
EXPERIMENTAL CONDITIONS: Laboratory and greenhouse studies
EFFECTS: At 0.5 kg/ha, slightly reduced shoot weight
COMMENTS: Cytokinins very active in promoting extra sprouting, while chlorflurecol, naptalam, TIBA and a few other compounds active to lesser degree; attempts to increase susceptibility of C. ROTUNDUS to herbicides by use of 6-benzylaminopurine (BA) and chlorflurecol generally disappointing
REFERENCE: Parker, C. and M.L. Dean, "The Effect of Some Plant Growth Regulators on the Sprouting of CYPERUS ROTUNDUS and Its Response to Herbicides," Proc. 11th. Br. Weed Cont. Conf. 744-751 (1972).

<5616>
CHEMICAL NAME: 4,4'-Bipyridinium, 1,1'-dimethyl-
CHEMICAL COMMON NAME: Paraquat
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 6.49 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5617>
<5617>
CHEMICAL NAME: 4,5,6-Pyridine, 2-trifluoromethyl-6-chloroimidazo-
CHEMICAL COMMON NAME: NC-4780
PLANT: Alfalfa (MEDICAGO SATIVA); Clover, ladino (TRIFOLIUM REPENS); Crownvetch (CORONILLA VARIA); Broadleaf weeds
EXPERIMENTAL DOSE: 0.8 kg/ha
APPLICATION METHODS: Preemergence treatments; April application
EXPERIMENTAL CONDITIONS: Field tests; herbicide treatments were main plots, legumes were subplots
EFFECTS: Severe injury to all plants
REFERENCE: Cope, W.A., T.W. Waldrep, D.S. Chamblee, and W.M. Lewis, "Evaluation of Herbicides in the Establishment of Alfalfa, Ladino White Clover, and Crownvetch," Agron. J. 65:820-825 (1973).

<5618>
CHEMICAL NAME: 4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
CHEMICAL COMMON NAME: Chlordane
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 2.1 lb/A
APPLICATION METHODS: Postemergence spray for insect control; 10 gal/A; 3X applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted
COMMENTS: Spray injury generally more severe with accumulative applications; most severe with oil soluble formulation of DDT for all dates and accumulative applications, and for dilan and BHC with single applications
REFERENCE: Probst, A. H. and R. T. Everly, "Effect of Foliage Insecticides on Growth, Yield and Chemical Composition of Soybeans," Agron. J. 49:577-581 (1957).

<5619>
CHEMICAL NAME: 4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
CHEMICAL COMMON NAME: Chlordane
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bluegrass, annual (POA ANNUA); Fescue, creeping red (FESTUCA RUBRA); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, tall (FESTUCA ARUNDINACEA); Crabgrass (DIGITARIA sp.)
EXPERIMENTAL DOSE: 65 to 230 lb/A; 50% WP and with vermiculite carrier
APPLICATION METHODS: Applied to soil surface as preemergence spray; 35 to 40 psi
EXPERIMENTAL CONDITIONS: Greenhouse and field studies; herbicides applied and seed planted at monthly intervals to determine residual effect; time period--1958 and 1959
EFFECTS: At 87 to 130 lb/A, germination inhibition or subsequent seedling kill of all turfgrasses except tall fescue (little or no adverse effect) and moderate control of crabgrass; chlordane on vermiculite had similar effects
COMMENTS: In pre-emergence crabgrass control study in turf, no significant differences found between calcium arsenate and arsenic complex + 7% nitrogen with respect to time of application; these herbicides effectively controlled crabgrass; however, arsenic complex + 7% nitrogen injured turf; fenac formulations did not satisfactorily control crabgrass and severely injured turf; chlordane most effective when applied in the spring but did not satisfactorily control crabgrass
REFERENCE: Juska, F.V., "Pre-emergence Herbicides for Crabgrass Control and Their Effects on Germination of Turfgrass Species," Weeds 9(1):137-144 (1961).

<5620>
CHEMICAL NAME: 4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
CHEMICAL COMMON NAME: Chlordane
PLANT: Pine, Monterey (PINUS RADIATA)
EXPERIMENTAL DOSE: 5 lb/A
APPLICATION METHODS: Addition to soil in which pine seedlings were grown
EXPERIMENTAL CONDITIONS: Greenhouse study
EFFECTS: Morphological changes in roots and mycorrhizae
COMMENTS: Internal alterations of mycorrhizae under influence of eradicants characterized by irregularities in shape of fungal mantle, restricted penetration of mycelia, and reduced development of Hartig net; external modifications of short roots suggested that biocides cause radical changes in exudates of rhizospheric organisms
REFERENCE: Wilde, S.A. and D.J. Persidsky, "Effect of Biocides on the Development of Ectotrophic Mycorrhizae in Monterey Pine Seedlings," Proc. Soil Sci. Soc. 20:107-110 (1956).

<5621>
CHEMICAL NAME: 4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
CHEMICAL COMMON NAME: Chlordane
PLANT: Cane (DRACAENA FRAGRANS)
EXPERIMENTAL DOSE: 0.5 and 2.0% solution
APPLICATION METHODS: 72% EC formulation
EXPERIMENTAL CONDITIONS: Infested cane immersed 15 min; each treatment replicated 5 times
EFFECTS: No phytotoxicity
COMMENTS: Test compound applied for scolytid beetle control -- satisfactory control with 0.5% solutions
REFERENCE: Hamlen, R.A. and R.E. Woodruff, "Scolytid Beetle Control in Cane of DRACAENA FRAGRANS, 'Massangeana'," J. Econ. Entomol. 68(2):231-232 (1975).

<5622>
CHEMICAL NAME: 4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
CHEMICAL COMMON NAME: Chlordane
PLANT: Crabgrass (DIGITARIA sp.); Bentgrass (AGROSTIS sp.); Bluegrass, Kentucky (POA PRATENSIS); Fescue (FESTUCA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Clover, white (TRIFOLIUM REPENS)
EXPERIMENTAL DOSE: 1.2 lb/1000 sq ft
APPLICATION METHODS: Preemergence
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight to moderate crabgrass control with little or no effect on turfgrasses or clover
COMMENTS: Where applied to greenhouse flats immediately after seeding rows of turfgrasses and crabgrasses, chemicals allowed turfgrass seeds to sprout and grow normally while crabgrass died within few day after sprouting
REFERENCE: Gallagher, J.E. and R.J. Otten, "New Organic Arsenical Materials for Pre-Emergence Crabgrass Control," Hormolog. 3(1):11-13 (1961).

<5623>
CHEMICAL NAME: 4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
CHEMICAL COMMON NAME: Chlordane
PLANT: Redtop (AGROSTIS ALBA); Bentgrass (AGROSTIS sp.); Bermudagrass, common (CYNODON DACTYLON); Orchard grass (DACTYLIS GLOMERATA); Fescue (FESTUCA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Bluegrass, Kentucky (POA PRATENSIS); Clover (TRIFOLIUM sp.)
EXPERIMENTAL DOSE: 25 lb/A; 50% WP
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: No adverse phytotoxic effect on turfgrasses at 2.5X rate used to control beetle larvae
COMMENTS: Chlordane had no effect on color, general appearance, or growth of following grasses: redtop, Colonial bentgrass, Astoria bentgrass, Bermuda grass, orchard grass, meadow fescue, Chewings fescue, perennial ryegrass, Canada bluegrass, Kentucky bluegrass, and rough, stalk bluegrass; white clover grew normally
REFERENCE: Fleming, W.E., "Chlordane for Control of Japanese Beetle Larvae in Turf," J. Econ. Ent. 40(6):932-933 (1947).

<5624>
CHEMICAL NAME: 4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
CHEMICAL COMMON NAME: Chlordane
PLANT: Foxtail, yellow (SETARIA GLAUCA)
EXPERIMENTAL DOSE: 60 and 90 lb/A
APPLICATION METHODS: Preemergence spray
EXPERIMENTAL CONDITIONS: Flat culture
EFFECTS: Reduced numbers or growth of rhizomes and tillers
COMMENTS: Kentucky bluegrass plants showed reduction of rhizome number and length and number of tillers; zytron, dacthal, and trifluralin produced greatest reduction; bandane and chlordane reduced rhizome development; crab-e-rad reduced number of tillers and length of rhizomes
REFERENCE: Gaskin, T.A., "Effect of Pre-Emergence Crabgrass Herbicides on Rhizome Development in Kentucky Bluegrass," J. Agron. 56(1):340-342 (1964).

<5625>
CHEMICAL NAME: 4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
CHEMICAL COMMON NAME: Chlordane
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 12.5, 50.0, and 100.0 ppm
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Arredondo loamy fine sand; pot culture
EFFECTS: No adverse effect on germination or growth
COMMENTS: BHC decreased germination; all other insecticides increased germination or had no effect; root and top weights decreased by chlordane, lindane, aldrin, dieldrin, TDE, DDT and BHC; top weights reduced by methoxychlor; heptachlor and toxaphene had no effect on growth
REFERENCE: Eno, C.F. and P.H. Everett, "Effects of Soil Applications of 10 Chlorinated Hydrocarbon Insecticides on Soil Microorganisms and the Growth of Stringless Black Valentine Beans," Soil Sci. Soc. Am. Proc. 22:235-238 (1958).

<5626>
CHEMICAL NAME: 4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
CHEMICAL COMMON NAME: Chlordane
PLANT: Bluegrass, annual (POA ANNUA); Bluegrass, Kentucky (POA PRATENSIS); Ryegrass, perennial (LOLIUM PERENNE); Fescue, creeping red (FESTUCA RUBRA); Fescue, tall (FESTUCA ARUNDINACEA)
EXPERIMENTAL DOSE: 43.5 to 130.5 lb/A
APPLICATION METHODS: Preemergence spray (field); 35 psi; for soluble or wettable materials; sand carrier for remaining materials; applied annually for 3 years; addition to soil (greenhouse)
EXPERIMENTAL CONDITIONS: Field study; bluegrass turf killed with methyl bromide and plots seeded 3 days afterwards with various turf grasses; time period--1960 to 1962; greenhouse study--studied seedling emergence (germination) up to 93 days in flat culture
EFFECTS: At 87 lb/A, no adverse effect on stand of turf grasses after 3 applications; reduced germination of all grasses (greenhouse)
COMMENTS: With few exceptions, herbicides retarded stand and vigor of turfgrasses seeded in turf killed with methyl bromide; chlordane was least and commercial arsenic complex plus 7% N most toxic to young seedlings; seedlings of Merion Kentucky bluegrass most resistent to herbicide injury; no appreciable decrease in original turf density noted except for arsenic complex material which severely injured bluegrass turf
REFERENCE: Juska, F.V. and A.A. Hanson, "Effect of Preemergence Crabgrass Herbicides on Seedling Emergence of Turfgrass Species," Weeds 12(2):97-101 (1964).

<5627>
<5627>
CHEMICAL NAME: 4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
CHEMICAL COMMON NAME: Heptachlor
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.5, 1.0, 1.25, and 2.0 oz/bushel of seed
APPLICATION METHODS: Seed treatment; WP formulations of all doses, EC formulation of 1.0 oz/bushel dose
EXPERIMENTAL CONDITIONS: Experiment 1--field study, slurry treatments of seed, 18-ft row plots containing 100 seeds, 8 replications, 1.25-oz rate tested, 19-month old seeds; experiment 2--field study, 20-ft rows with 100 seeds/row, 4 replications, randomized complete block design, highly vivable seeds, all rates except 1.25 oz tested
EFFECTS: Experiment 1--significant decrease in number of emerged plants and significant increase in mean emergence period; Experiment 2--no appreciable injury except at 2-oz rate where germination injury was recorded as slight
COMMENTS: Older experiment 1 seeds apparently less resistant
REFERENCE: Starks, K.J. and J.H. Lilly, "Insecticide Seed Treatment of Soybeans in Relation to Phytotoxicity and Seed-Corn Maggot Control," J. Econ. Entomol. 48(5):538-543 (1955).

<5628>
CHEMICAL NAME: 4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
CHEMICAL COMMON NAME: Heptachlor
PLANT: Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 25, 50, 75 and 100 ppm; xylene emulsion (100 ppm)
APPLICATION METHODS: Solution addition to filter paper in petri plates
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--75 F; evaluation time--48 hr; germinated seed selected and exposed
EFFECTS: Reduced root growth at 25 ppm and higher concentrations; field study essentially corroborated results
COMMENTS: Phytotoxic effect of insecticide fertilizer mixtures attributed to fertilizer which interferred with uptake of water required by seed for germination, or to insecticide or solvent which may cause seedling damage; phorate and diazinon were more phytotoxic than Trithion or heptachlor in field and laboratory tests; insecticide solvent Velsicol AR-60 was more phytotoxic than xylene--depressed seedling emergence significantly in the field
REFERENCE: Allen, W.R., W.L. Askew, and K. Schreiber, "Effect of Insecticide Fertilizer Mixtures and Seed Treatments on Emergence of Sugar Beet Seedlings," J. Econ. Ent. 54(1):181-187 (1961).

<5629>
CHEMICAL NAME: 4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
CHEMICAL COMMON NAME: Heptachlor
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 0.9 lb/A
APPLICATION METHODS: Postemergence spray for insect control; 10 gal/A; 3X applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effects noted
COMMENTS: Spray injury generally more severe with accumulative applications; most severe with oil soluble formulation of DDT for all dates and accumulative applications, and for dilan and BHC with single applications
REFERENCE: Probst, A. H. and R. T. Everly, "Effect of Foliage Insecticides on Growth, Yield and Chemical Composition of Soybeans," Agron. J. 49:577-581 (1957).

<5630>
CHEMICAL NAME: 4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
CHEMICAL COMMON NAME: Heptachlor
PLANT: Bean, black Valentine (PHASEOLUS VULGARIS)
EXPERIMENTAL DOSE: 12.5, 50.0, and 100.0 ppm
APPLICATION METHODS: Preplant incorporation
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--Adrredondo loamy fine sand; pot culture
EFFECTS: No adverse effect on germination but reduced root or shoot growth at high rates
COMMENTS: BHC decreased germination; all other insecticides increased germination or had no effect; root and top weights decreased by chlordane, lindane, aldrin, dieldrin, TDE, DDT and BHC; top weights reduced by methoxychlor; heptachlor and toxaphene had no effect on growth
REFERENCE: Eno, C.F. and P.H. Everett, "Effects of Soil Applications of 10 Chlorinated Hydrocarbon Insecticides on Soil Microorganisms and the Growth of Stringless Black Valentine Beans," Soil Sci. Soc. Am. Proc. 22:235-238 (1958).

<5631>
CHEMICAL NAME: 5-Benzofuranol, 2-ethoxy-2,3-dihydro-3,3-dimethyl-, methanesulfonate
CHEMICAL COMMON NAME: Ethofumesate
PLANT: Beet, sugar (BETA VULGARIS); Corn (ZEA MAYS); Bean, pinto (PHASEOLUS VULGARIS); Barley (HORDEUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 2.2 to 9.0 kg/ha; 0.20 to 0.76 ppmw
APPLICATION METHODS: Preplant incorporated (5 in. depth) in field (374 l./ha); addition to soil in in greenhouse study
EXPERIMENTAL CONDITIONS: Field and greenhouse studies; soils-- 7 types; greenhouse photoperiod--15 hr; temperature-- 12 hr at 16 C and 12 hr at 27 C; time period--1972 and 1973
EFFECTS: Yield reduction of sugarbeet and corn in field at 3.4 kg/ha but not of pinto bean; in greenhouse, growth reduction of barley, wheat and corn as low as 0.1 ppmw
COMMENTS: Tolerance of sugarbeets to ethofumesate associated with rate of application and soil type; yield of roots significantly reduced by preplant-incorporated applications of ethofumesate to sandy loam soil; pinto beans yielded normally when planted on sandy loam soil within 4 to 6 weeks after ethofumesate incorporated; corn yields reduced in proportion to the rate of herbicide applied 3 weeks before planting
REFERENCE: Schweizer, E.E., "Crop Response to Soil Applications of Ethofumesate," Weed Sci. 23(5):409-413 (1975).

<5632>
CHEMICAL NAME: 5-Benzofuranol, 2-ethoxy-2,3-dihydro-3,3-dimethyl-, methanesulfonate
CHEMICAL COMMON NAME: Ethofumesate
PLANT: Ryegrass, Italian (LOLIUM MULTIFLORUM); Fescue, rattail (FESTUCA MYUROS); Bluegrass, annual (POA ANNUA); Ryegrass, perennial (LOLIUM PERENNE); Fescue, tall (FESTUCA ARUNDINACEA); Fescue, creeping red (FESTUCA RUBRA); Orchard grass (DACTYLIS GLOMERATA); Oat, wild (AVENA FATUA)
EXPERIMENTAL DOSE: Greenhouse- 1.1, 1.4, 1.7, 1.9 and 2.2 kg/ha; preemergence field-0.8, 1.1, 1.4, 1.7, 2.2, 2.8, 3.4 and 4.5 kg/ha; postemergence field-1.1, 1.7, 2.2, 2.8, 3.4 and 4.5 kg/ha
APPLICATION METHODS: Applied in water at 374 l./ha volume; preemergence treatment in greenhouse, preemergence and postemergence in field
EXPERIMENTAL CONDITIONS: Greenhouse--9 grass species, dry silt loam soil, 2 cm water applied after planting to move herbicide, treatments replicated 4 times, observations made at 6 weeks; field--control of rattail fescue and bluegrass in ryegrass fields investigated, randomized complete block design with 3 replications, plot size--2.4 x 6 m, preemergence applications in October, postemergence in November, weed control assessed in March and April
EFFECTS: Greenhouse--Italian and perennial ryegrass tolerant, tall fescue tolerant at 1.1 kg/ha but not at other rates, orchard grass, wild oat and soft chess reduced at 1.1 kg/ha but eliminated at higher rates, bluegrass, rattail fescue and red fescue eliminated at all rates; field--bluegrass eliminated by all treatments, 0.8 kg/ha gave 55% rattail fescue control but other rates gave 72-100%, all ryegrass stands satisfactory for seed production, preemergence treatments slightly superior to early postemergence for rattail fescue control
COMMENTS: Ethofumesate is safe and effective treatment for selective control of annual bluegrass and rattail fescue in Italian ryegrass; more damage for ryegrass stand in greenhouse than in field
REFERENCE: Lee, W.O., "Winter Annual Grass Weed Control in Italian Ryegrass with Ethofumesate," Weed Sci. 25(3):252-255 (1977).

<5633>
CHEMICAL NAME: 5-Benzofuranol, 2-ethoxy-2,3-dihydro-3,3-dimethyl-, methanesulfonate
CHEMICAL COMMON NAME: NC-8438
PLANT: Bluegrass, Kentucky (POA PRATENSIS); Bentgrass, Rhode Island (AGROSTIS TENUIS); Fescue, creeping red (FESTUCA RUBRA); Crabgrass (DIGITARIA ISCHAEMUM)
EXPERIMENTAL DOSE: 3 and 6 lb/A
APPLICATION METHODS: Preemergence treatments with CO(2) sprayer at 86 gpa
EXPERIMENTAL CONDITIONS: Crabgrass control studies in turfgrass; 4 x 5 ft plot with 3 replications; herbicides applied May 1, injury ratings on August 22
EFFECTS: 61 and 79% crabgrass control at 3 and 6 lb/A, respectively; minor turfgrass injury at 3 lb/A but moderate injury at 6 lb/A
COMMENTS: Fescue, bentgrass, and bluegrass tabulated as turfgrass
REFERENCE: Coville, C.M. and J.A. Jagschitz, "Herbicides for Preemergence Crabgrass and Goosegrass Control in Turfgrass--1975," Proc. Northeast. Weed Sci. Soc. 30:367-371 (1976).

<5634>
CHEMICAL NAME: 5-Benzofuranol, 2-ethoxy-2,3-dihydro-3,3-dimethyl-, methanesulfonate
CHEMICAL COMMON NAME: Ethofumesate
PLANT: Barleygrass (HORDEUM sp.); Ryegrass, perennial (LOLIUM PERENNE); Bromus mollis (BROMUS MOLLIS); Vernal grass, sweet (ANTHOXANTHUM ODORATUM); Grasses; Clover, white (TRIFOLIUM REPENS)
EXPERIMENTAL DOSE: 1.0 to 4.0 kg/ha
APPLICATION METHODS: Foliar spray; 250 to 400 l./ha
EXPERIMENTAL CONDITIONS: Field study; 8 locations in New Zealand
EFFECTS: Effective barleygrass control at 2.0 kg/ha in June and July with slight to moderate damage to other grasses and kill of white clover
COMMENTS: Ethofumesate applied in June and July provided equivalent barley grass control to mixture of 2,2-DPA and TCA; ryegrass demonstrated high degree of tolerance to ethofumesate, whereas BROMUS MOLLIS and sweet vernal variably susceptible in North Island trials and BROMUS MOLLIS very susceptible in a Southland trial
REFERENCE: O'Connor, B.P., I. C. Logan, and G.R. Rowe, "Effect of Ethofumesate on Barley Grass and Other Pasture Species," Proc. 28th. New Zealand Weed and Pest Cont. Conf. 28:12-16 (1975).

<5635>
CHEMICAL NAME: 5-Benzofuranol, 2-ethoxy-2,3-dihydro-3,3-dimethyl-, methanesulfonate
CHEMICAL COMMON NAME: Ethofumesate
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Timothy (PHLEUM PRATENSE); Speedwell, creeping (VERONICA FILIFORMIS); Fescue (FESTUCA PRATENSIS)
EXPERIMENTAL DOSE: 1.68 and 5.00 kg/ha
APPLICATION METHODS: Postemergence spray; 337 l./ha at 2.07 bars pressure with Tee jets
EXPERIMENTAL CONDITIONS: Field study; applied at 2-3 leaf stage and tillering
EFFECTS: Very slight damage to grass at both growth-stage applications at normal rate (1.68 kg/ha) and moderate control (overall) of broadleaf weeds
COMMENTS: All varieties susceptible to isoproturon, except at tillering stage, and to difenzoquat; perennial and Italian ryegrass varieties resistant to all other herbicides; all high-rate applications, and normal rate of difenzoquat, checked timothy
REFERENCE: Oswald, A.K. and R.J. Hagger, "The Tolerance of Ten Grass Varieties to Six Herbicides With a Potential for Wild Oat Control in Herbage Seed Crops," Proc. 12th. Br. Weed Cont. Conf. 2:715-722 (1974).

<5636>
CHEMICAL NAME: 5-Benzofuranol, 2-ethoxy-2,3-dihydro-3,3-dimethyl-, methanesulfonate
CHEMICAL COMMON NAME: Ethofumesate
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM); Timothy (PHLEUM PRATENSE); Cocksfoot; Fescue (FESTUCA PRATENSIS)
EXPERIMENTAL DOSE: 1.68 and 5.00 kg/ha
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Field study; soil--sandy loam

<5636>
<5636> CONT.
EFFECTS: All grasses resistant to damage at normal (lower) rate
COMMENTS: Isoproturon caused severe damage to all grasses except when sprayed 8 weeks after cereal harvest; established cock's-foot notably resistant; difenzoquat damaged all grasses even when established, while ethofumesate checked establishing grasses sown in August; none of the other herbicides affected the perennial and Italian rye-grasses; timothy most susceptible, especially to herbicides applied at high doses
REFERENCE: Oswald, A.K., "The Effects of Six Herbicides With a Potential for Wild-Oat Control on Ten Direct and Undersown Grasses," Proc. 1976 Br. Crop Protection Conf. 3:989-999 (1976).

<5637>
CHEMICAL NAME: 5-Benzofuranol, 2-ethoxy-2,3-dihydro-3,3-dimethyl-, methanesulfonate
CHEMICAL COMMON NAME: Ethofumesate
PLANT: Ryegrass, perennial (LOLIUM PERENNE); Ryegrass, Italian (LOLIUM MULTIFLORUM)
EXPERIMENTAL DOSE: 1.0 and 2.0 lb/A
APPLICATION METHODS: Foliar spray; 40 gal/A
EXPERIMENTAL CONDITIONS: Field study; time period--1973 and 1974
EFFECTS: Slightly improved clean seed yield and no adverse effect on germination
COMMENTS: Ethofumesate and methabenzthiazuron applied to three replicates of perennial ryegrass at tillering stage of sowing year to simulate application for control of grass weeds, did not significantly affect yield or seed germination immediately after harvest
REFERENCE: Evans, A.W. and D.A. Muncey, "Observations on the Effect of Three Herbicides with Promise in the Control of Graminaceous Weeds on the Seed Production of Ryegrass," Proc. 12th Br. Weed Cont. Conf. 2:723-726 (1974).

<5638>
CHEMICAL NAME: 5-Benzofuranol, 2-ethoxy-2,3-dihydro-3,3-dimethyl-, methanesulfonate
CHEMICAL COMMON NAME: Ethofumesate
PLANT: Plants; Beet, sugar (BETA VULGARIS)
EXPERIMENTAL DOSE: 3.0 and 4.0 kg/ha
APPLICATION METHODS: Preplant incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 sites in Romania; time period--1972 and 1973
EFFECTS: Moderate weed control with no adverse effect on sugar beet yield
COMMENTS: Results obtained from herbicides used alone unsatisfactory with many species uncontrolled; mixture of herbicides, or sequential treatments required for satisfactory weed control; best results obtained using ethofumesate associated with lenacil or phenmedipham
REFERENCE: Sarpe, N., O. Segarceanu, L. Ciorlaus, I. Popovici, I. Clotan, and C. Nagy, "The Efficiency of Herbicides Based on Pyrazone, Ethofumesate, Lenacil and Phenmedipha, Used Alone or in Combination, in Sugar Beet Grown Under Romanian Conditions," Proc. 12th. Br. Weed Cont. Conf. 2:477-483 (1974).

<5639>
CHEMICAL NAME: 5-Benzofuranol, 2-ethoxy-2,3-dihydro-3,3-dimethyl-, methanesulfonate
CHEMICAL COMMON NAME: Ethofumesate
PLANT: Beet, sugar (BETA VULGARIS); Foxtail, slender (ALOPECURUS MYOSUROIDES); Crabgrass, large (DIGITARIA SANGUINALIS); Millet (PANICUM MILIACEUM); Canarygrass (PHALARIS CANARIENSIS); Foxtail, green (SETARIA VIRIDIS); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Fumitory, common (FUMARIA OFFICINALIS); Goosegrass (GALIUM APARINE); Campion (MELANDRIUM ALBUM); Sowthistle, annual (SONCHUS OLERACEUS); Spurrey, corn (SPERGULA ARVENSIS); Chickweed, common (STELLARIA MEDIA); Oat, wild (AVENA FATUA); Barnyardgrass (ECHINOCHLOA CRUSGALLI); Pimpernel, common (ANAGALLIS ARVENSIS); Orach (ATRIPLEX PATULA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Lamb's-quarters (CHENOPODIUM ALBUM); Goosefoot, maple-leaf (CHENOPODIUM HYBRIDUM); Jimsomweed (DATURA STRAMONIUM); Wartweed (EUPHORBIA HELIOSCOPIA); Hempnettle (GALEOPSIS TETRAHIT); Poppy, corn (PAPAVER RHOEAS); Knotweed (POLYGONUM AVICULARE); Bindweed, black (POLYGONUM CONVOLVULUS); Ladysthumb (POLYGONUM PERSICARIA); Nightshade, black (SOLANUM NIGRUM); Nettle, stinging (URTICA URENS); Speedwell, field (VERONICA AGRESTRIS); Bird's eye (VERONICA PERSICA); Violet (VIOLA sp.); Darnel (LOLIUM sp.); Fool's parsley (AETHUSA CYNAPIUM); Galinsoga (GALINSOGA PARVIFLORA); Deadnettle (LAMIUM sp.); Butter-and-eggs (LINARIA VULGARIS); Chamomile, wild (MATRICARIA CHAMOMILLA); Boys-and-girls (MERCURIALIS ANNUA); Forget-me-not (MYOSOTIS ARVENSIS); Radish, wild (RAPHANUS RAPHANISTRUM); Crunchweed (SINAPIS ARVENSIS); Hedgenettle (STACHYS ANNUA); Pennycress, field (THLASPI ARVENSE); (TRIPLEUROSPERMUM MARITIUM); Speedwell, ivy-leaf (VERONICA HEDERIFOLIA)
EXPERIMENTAL DOSE: 1.0 - 2.0 kg/ha
APPLICATION METHODS: Formulation--20% w/v WP; preemergence treatments
EXPERIMENTAL CONDITIONS: Randomized trials with 3 or 4 replications; plots--minimum of 20 sq m, some were 0.5-1.0 ha
EFFECTS: Beet population not significantly affected; susceptible plants in plant list--slender foxtail through common chickweed; affected moderately--wild oat through violet; resistant or moderately resistant--darnel through ivy-leaved speedwell
COMMENTS: Wild oat control increases with increasing concentration; ethofumesate in combination with other chemicals also reported
REFERENCE: Griffiths, W., J.M. Belien, J.F. Salembier, and H. Verfaillie, "Weed Control in Sugar Beet with Ethofumesate," Meded. Fac. Landbouwwef. Rijksuniv Gent. 39(2 part 1):493-506 (1974).

<5640>
CHEMICAL NAME: 5-Pyrimidinemethanol, alpha(2-chlorophenyl)-alpha-(4-chlorophenyl)-
CHEMICAL COMMON NAME: Fenarimol
PLANT: Grape (VITIS sp.)
EXPERIMENTAL DOSE: 1.4, 2.8, and 5.6 mg/100 ml
APPLICATION METHODS: Postemergence spray to runoff
EXPERIMENTAL CONDITIONS: Greenhouse study; RH--20 to 50%; temperature--16 to 26 C; evaluation time--14 da
EFFECTS: Stunting, cupping, and foliage deformation occurred at 2.8 and 5.6 mg/100 ml

<5640> CONT.
COMMENTS: Fenarimol gave almost complete control when applied 4 days after inoculation; 2.8 and 5.6 mg/100 ml phytotoxic to 'Baco Noir' foliage; 1.4 mg/100 ml, fenarimol possessed significant eradication capability and was not phytotoxic
REFERENCE: Spotts, R.A., "Chemical Eradication of Grape Black Rot Caused by GUIGNARDIA BIDWELLII," Plant Dis. Rep. 61(2):125-128 (1977).

<5641>
CHEMICAL NAME: 5-Pyrimidinemethanol, alpha-(2,4-dichlorophenyl)-alpha-phenyl
CHEMICAL COMMON NAME: Triarimol
PLANT: Apple (MALUS SYLVESTRIS)
EXPERIMENTAL DOSE: 0.004%
APPLICATION METHODS: Postemergence spray for control of fungal disease; 200 gal/A; sprayed to run-off
EXPERIMENTAL CONDITIONS: Field study; established orchards; time period--1967 to 1970; trees shielded during spraying
EFFECTS: Increased fruit damage (russeting) of most but not all varieties; alleviated to some extent with Urbacid or captan
COMMENTS: New compounds increased fruit russet and reduced crop and fruit size on several cultivars; important amelioration of russet achieved in some instances by adding Urbacid or captan to sprays
REFERENCE: Butt, D.J., A.H.M. Kirby, and C.J. Williamson, "Fungitoxic and Phytotoxic Effects of Fungicides Controlling Powdery Mildew on Apple," Ann. Appl. Biol. 75(2):217-228 (1973).

<5642>
CHEMICAL NAME: 6,3-Methenofuro[3,2-c]bisoxireno[F,N]oxacycloundecin-4,8(6H)-dione, 1a,1b,2a,6a,7,9a,10,10a-octahydro-10a-methyl-7-methylene-4H-, [1aS-(1aR*,1bS*,2aS*,6S*,6aS*,9aR*,10aR*)]-
CHEMICAL COMMON NAME: Mikanolide
PLANT: Wheat (TRITICUM AESTIVUM); Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 1 X 10(-3) and 5 X 10(-4)M (1 ml and 50 micro l.)
APPLICATION METHODS: Test solutions in standardized wheat seedling and dwarf pea bioassays (using GA stimulant)
EXPERIMENTAL CONDITIONS: Laboratory study
EFFECTS: Growth reduction of wheat but no blockage of GA-stimulated pea growth
COMMENTS: Of 524 compounds examined, 71 were found highly active and further 126 substances found significantly active as growth retardants; 27% of the total number only active in wheat test, but not in other system used; activity both in the wheat-seedling test and in pea bioassay found in the case of 58 compounds; gibberellin-antagonistic activity in pea test without growth-retardative activity in wheat test found for 31 substances
REFERENCE: Schreiber, K., "Plant Growth Inhibitors of Plant Origin," Pesticides 3:483-485 (1974).

<5643>
CHEMICAL NAME: 6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide
CHEMICAL COMMON NAME: Endosulfan
PLANT: Tinda (CITRULLUS VULGARIS); Bottlegoard; Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 0.03 and 0.04 %
APPLICATION METHODS: Postemergence spray
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Leaf spots within 3 days at 0.4 % application rate on all three species
COMMENTS: Safe (non-phytotoxic) insecticides on the cucurbits were DDVP, carbaryl, malathion, endosulfan, thiometon, and phosphamidon
REFERENCE: Sood, N.K., U.K. Kaushik, and V.S. Rathore, "Phytotoxicity of Modern Insecticides to Cucurbits," Indian J. Hort. 29(1):111-113 (1972)

<5644>
CHEMICAL NAME: 6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide
CHEMICAL COMMON NAME: Endosulfan
PLANT: Cabbage, Chinese (BRASSICA PEKINENSIS)
EXPERIMENTAL DOSE: 0.50 kg/ha
APPLICATION METHODS: Insecticidal spray; 1000 l./ha
EXPERIMENTAL CONDITIONS: Field study; pollen collected at various times after application; evaluation time--6 hr to 21 da
EFFECTS: Significant pollen sterility for 1 to 14 days
COMMENTS: Most insecticides affected pollen viability only for first 4-5 days, except a few which affected it even up to 12 or 15 days
REFERENCE: Lal, O.P., "Insecticidal Sprayings Causing Pollen Sterility in Chinese Cabbage," Act. Agron. Acad. Scient. Hungar. 24:145-147 (1975).

<5645>
CHEMICAL NAME: 6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide
CHEMICAL COMMON NAME: Endosulfan
PLANT: Muskmelon (CUCUMIS MELO)
EXPERIMENTAL DOSE: 0.10, 0.15, 0.20, and 4.0%
APPLICATION METHODS: As spray in 625 l./ha of spray material and as dust (4.0%) or 42-day old plants
EXPERIMENTAL CONDITIONS: Field tests; 3 replications of each treatment, 10 plants per replicate; phytotoxicity categories--(1) mild, 1 cm or less of marginal leaf surface burnt and curled, (2) medium, 1 to 2 cm of same effect, (3) severe, same effect evident on more than 2 cm; observations at 24 hr and at 3 and 6 days after treatment
EFFECTS: Safe at 0.10 and 0.15%, severe effects at 0.20% with 100% of leaves affected after 3 and 6 days;

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safe at 4.0%
COMMENTS: Average lenght of leaf, 6 cm from petiole to tip; insecticide applied for red pumpkin beetle (AULACOPHORA FOVEICOLLIS) control
REFERENCE: Kadyan, A.S., S.N. Kaushik, and D.S. Gupta, "Phytotoxicity of Some Insecticides to Muskmelons," Indian J. Entomol. 33(4):463-465 (1972).

<5646>
CHEMICAL NAME: 6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide
CHEMICAL COMMON NAME: Endosulfan
PLANT: Papaya (CARICA PAPAYA)
EXPERIMENTAL DOSE: 0.25, 0.5, 1.0, and 2.0 lb/100 gal
APPLICATION METHODS: Postemergence spray at 60 psi; 800 ml application to 4 plants; 25% WP formulation and 2 lb/gal technical endosulfan miscible concentrate formulation
EXPERIMENTAL CONDITIONS: 6 to 13 cm tall plants when treatment began; each concentration applied to 4 plants once a week for 3 weeks; plants placed outdoors after spray treatments; growth and leaf damage assessed; final height measurements, 5 weeks after initial treatment
EFFECTS: No injury
COMMENTS: Concentrations were usual field recommendations for insect and mite control; concentrations equivalent to 0.031, 0.062, 0.125, and 0.25% active ingredients, respectively
REFERENCE: Sherman, M. and F.F. Sanchez, "Further Studies on the Toxicity of Insecticides and Acaricides to the Papaya," Univ. Hawaii Agric. Exper. Stat. Tech. Bull. 74:5-63 (1968).

<5647>
CHEMICAL NAME: 6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide
CHEMICAL COMMON NAME: Endosulfan
PLANT: Tomato (LYCOPERSICON PIMPINELLIFOLIUM); Tomato (LYCOPERSICON PERUVIANUM); Tomato (LYCOPERSICON HIRSUTUM); Tomato (LYCOPERSICON ESCULENTUM); Petunia (PETUNIA sp.)
EXPERIMENTAL DOSE: 1000 ppm; EC
APPLICATION METHODS: Added (spray) to agar medium disk to run-off
EXPERIMENTAL CONDITIONS: Laboratory study; evaluation time--15 hr; pollen germinated and length of germination tube measured
EFFECTS: Reduced germination and pollen tube growth
COMMENTS: Germination of petunia and tomato pollen completely inhibited by topical applications of naled; reduction in germination and tube elongation of pollen caused by parathion, azinphosmethyl, difocol, endosulfan, dichlorvos, DDT, and gardona
REFERENCE: Gentile, A.G., K.J. Gallagher, and Z. Santner, "Effect of Some Formulated Insecticides on Pollen Germination in Tomato and Petunia," J. Econ. Ent. 64(4):916-919 (1971).

<5648>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-
CHEMICAL COMMON NAME: Carbofuran phenol
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 and 10.0 mM
APPLICATION METHODS: Addition to sterile solution
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated pea stem segments; radiolabeled IAA utilized
EFFECTS: Growth stimulation and inhibited IAA decarboxylation
COMMENTS: Carbofuran phenol and 3-hydroxy-carbofuran phenol found inhibitory to indole-3-acetic acid oxidase; metabolites stimulated plant growth in pea stem segment assay with low concentration of IAA
REFERENCE: Lee, T.T., "Insecticide-Plant Interaction: Carbofuran Effect on Indole-3-Acetic Acid Metabolism and Plant Growth," Life Sci. 18(2):205-210 (1976).

<5649>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: Carbofuran
PLANT: Apple (MALUS SYLVESTRIS); Apricot (PRUNUS ARMENIACA); Cherry (PRUNUS MAHALEB); Cherry (PRUNUS AVIUM); Peach (PRUNUS PERSICA); Pear (PYRUS COMMUNIS); Plum (PRUNUS DOMESTICA)
EXPERIMENTAL DOSE: 6.7 kg/ha
APPLICATION METHODS: Grannular application (10% G) to soil followed by watering
EXPERIMENTAL CONDITIONS: Greenhouse study; temperature--21 to 30 C; soil--Vineland silt loam; pot culture
EFFECTS: No phytoxicity observed
COMMENTS: Oxamyl, aldicarb, and carbofuran reduced nematode numbers; phenamiphos was less effective; oxamyl and aldicarb also controlled aphids and mites
REFERENCE: Allen, W.R. and C.F. Marks, "Chemical Control and Population Studies of PRATYLENCHUS PENETRANS on Fruit Tree Understocks," Plant Dis. Rep. 61(2):84-87 (1977).

<5650>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: Carbofuran
PLANT: Cauliflower (BRASSICA OLERACEA)
EXPERIMENTAL DOSE: 2.20, 2.39, and 2.48 kg/ha
APPLICATION METHODS: Broadcast at time of seeding; incorporated by "boy-wave" method; G formulation
EXPERIMENTAL CONDITIONS: Field study; soils--sandy loam and silt loam, time period--1972 and 1973; locations in England and Canada; trifluralin and propachlor combined treatment for effective weed control
EFFECTS: No adverse effect on cauliflower stand or yield
COMMENTS: Two combinations of herbicides, trifluralin incorporated pre-drilling plus propachlor pre-emergence, and nitrofen plus propachlor pre-emergence, and nitrofen plus propachlor applied pre-emergence, gave good weed control; relative effectiveness depended on species composition of weed

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population; insecticides isophenphos, carbofuran, chlorfenvinphos and fensulfothion applied as bow-wave treatments; none in combination with herbicides or not, adversely affected crop stand or yield; yield reduced when either weeds or root-fly maggots not controlled
REFERENCE: Finlayson, D.G. and C.J. Campbell, "Herbicides and Insecticides: Their Compatibility and Effects on Weeds, Insects and Earthworms in the Minicauliflower Crop," Ann. Appl. Biol. 79(1):95-108 (1975).

<5651>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: Carbofuran
PLANT: Spangletop, bearded, (LEPTOCHLOA FASCICULARIS)
EXPERIMENTAL DOSE: 2.8 to 33.6 kg/ha
APPLICATION METHODS: Preplant incorporated (3 to 4 cm depth) by subsurface insecticide applicator; 10% G formulation
EXPERIMENTAL CONDITIONS: Field study; rutabagas harvested after 60 days at 30-day intervals thereafter; whole, sliced, and peelings used to evaluate insecticide persistence with first instar maggots of HYLEMA BRASSICAE
EFFECTS: Undefined phytotoxic effect on rutabagas at higher application rates
COMMENTS: At high rates, phytotoxicity recorded for all compounds except trichloronat and fonofos; phytotoxicity so severe with AC64475 that all plants destroyed with rates in excess of 11.2 kg/acre
REFERENCE: Read, D.C., "Toxicity of Carbamate and Organophosphorus Insecticide Residues Absorbed by Rutabagas Grown in Treated Soil," Can. Entmol. 106(7):1319-1325 (1974).

<5652>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: Carbofuran
PLANT: Pea, sweet (PISUM SATIVUM)
EXPERIMENTAL DOSE: 0.1 and 10.0 mM
APPLICATION METHODS: Addition to sterile solution
EXPERIMENTAL CONDITIONS: Laboratory study; etiolated pea stem segments; radiolabeled IAA utilized
EFFECTS: Growth stimulation and inhibited IAA decarboxylation
COMMENTS: Carbofuran phenol and 3-hydroxy-carbofuran phenol found inhibitory to indole-3-acetic acid oxidase; metabolites stimulated plant growth in pea stem segment assay with low concentration of IAA
REFERENCE: Lee, T.T., "Insecticide-Plant Interaction: Carbofuran Effect on Indole-3-Acetic Acid Metabolism and Plant Growth," Life Sci. 18(2):205-210 (1976).

<5653>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: Carbofuran
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 0.25, 0.5, and 1.0 lb/A
APPLICATION METHODS: 10% G formulation; postemergence--late-whorl stage and early-boot stage; preemergence treatments also
EXPERIMENTAL CONDITIONS: Experiment 1--11 treatments, 2 rows by 30 ft plots, application July 30 to late-whorl stage sorghum; experiment 2--7 treatments, 2 rows by 25 ft plots, August 7 insecticide application to early-boot stage of sorghum; experiment 3--27 treatments, 2 rows by 50 ft plots, preemergence treatment, phytotoxicity measured by plant emergence; randomized complete block design with 3 replicates; test compound is insecticide
EFFECTS: No reported toxicity
COMMENTS: Insecticide applied for greenbug control
REFERENCE: Depew, L.J., "Further Evaluation of Insecticides for Greenbug Control on Grain Sorghum in Kansas," J. Econ. Entomol. 65(4):1095-1098 (1972).

<5654>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: Carbofuran
PLANT: Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1, 2, and 4 lb/A
APPLICATION METHODS: In 7-in. bands over row and in drill hole with seed
EXPERIMENTAL CONDITIONS: Plano silt loam; plots--single 40-in. rows 40 ft long, randomized block design and 3 or 4 replicates; field studies; yields determined as indication of growth
EFFECTS: No influence on corn yield from 7-in. band application or from drill hole placement
REFERENCE: Apple, J.W., "Response of Corn to Granular Insecticides Applied to the Row at Planting," J. Econ. Entomol. 64(5):1208-1211 (1971).

<5655>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: Carbofuran
PLANT: Apple (PYRUS MALUS); Plum (PRUNUS sp.)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal and 0.25 and 0.5 pints/100 gal
APPLICATION METHODS: Dilute spray by hydraulic sprayer at 35 gal/min and 450-600 psi; 75% WP and 4% flowable formulations
EXPERIMENTAL CONDITIONS: Field and laboratory tests; randomized complete block design with single tree plots; insecticide treatments replicated 3 to 4 times; sulfur, captan, or combination of both fungicides added with insecticides; multi-year experiments
EFFECTS: No phytotoxicity observed
COMMENTS: Main emphasis of study was control of plum curculio (CONOTRACHELUS NENUPHAR)
REFERENCE: Forsythe, H.Y., Jr. and F.R. Hall, "Control of the Plum Curculio in Ohio," J. Econ. Entomol. 65(6):1703-1706 (1972).

<5656>
<5656>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: Carbofuran
PLANT: Bean, bush (PHASEOLUS HUMILIS); Bean, lima (PHASEOLUS LIMENSIS)
EXPERIMENTAL DOSE: 1 oz/cwt of seed
APPLICATION METHODS: Slurry treatments--seeds placed in insecticide mixture and shaken 3 to 10 min; seed furrow treatments with granular formulation
EXPERIMENTAL CONDITIONS: Experiment 1--randomized complete block design, Lima silt loam, May 24 planting, 4 replications; experiment 2--some conditions except Honeoye silt loam and June 6 planting
EFFECTS: No significant phytotoxicity
COMMENTS: Main study emphasis was seedcorn maggot control
REFERENCE: Eckenrode, C.J., N.L. Gauthier, D. Danielson, and D.R. Webb, "Seedcorn Maggot: Seed Treatments and Granule Furrow Applications for Protecting Beans and Corn," J. Econ. Entomol. 66(5):1191-1194 (1973).

<5657>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: Carbofuran
PLANT: Clover, sweet (MELILOTUS sp.); Alfalfa (MEDICAGO SATIVA)
EXPERIMENTAL DOSE: 5, 50 and 500 ppm
APPLICATION METHODS: Powder prepared from granular formulation
EXPERIMENTAL CONDITIONS: Plants grown in disposable plastic pouches in 25 ml Bryan's solution; 10 pouches for each concentration and for control; 5 seeds per pouch, grown under 1 amp with 12 hr photoperiod; after germination one ml of 1:5 (w/v) nitragin AB added as inoculom; average dry weight determined after 30 days
EFFECTS: Sweetclover--growth inhibition at 50 and 500 ppm, 72% at 500 ppm, growth promoted at 5 ppm; alfalfa--inhibition at all rates, 80% at 500 ppm
REFERENCE: Lin, S-C., B.R. Funke, and J.T. Schulz, "Effects of Some Organophosphate and Carbamate Insecticides on Nitrification and Legume Growth," Plant Soil 37:489-496 (1972).

<5658>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: NIA-10242
PLANT: Bean, snap (PHASEOLUS VULGARIS); Bean, lima (PHASEOLUS LIMENSIS); Soybean (GLYCINE MAX); Corn (ZEA MAYS); Pea, sweet (PISUM SATIVUM); Pumpkin (CUCURBITA PEPO)
EXPERIMENTAL DOSE: 2.0 and 4.0 lb/A; 50% WP
APPLICATION METHODS: Added to seed uniformly and stored (23 C)
EXPERIMENTAL CONDITIONS: Greenhouse study; seed stored 3 mo after treatment prior to planting; soil--sandy loam; temperature--approx 27 C; evaluation time--7 and 10 da
EFFECTS: No adverse effect on germination or seedling growth
COMMENTS: Diazinon, CP-53926 and CP-47114 delayed and reduced germination of snap beans and lima beans; CP-53926 phytotoxic to soybeans; dimethoate and NIA-10242 did not adversely affect germination of any of crop seeds; peas, corn, and pumpkins did not appear affected by insecticide treatments
REFERENCE: Broersma, D. B. and W. H. Luckmann, "Seed Treatment Techniques and Phytotoxicity Studies on Some Grain and Vegetable Crops," J. Econ. .03):1-823 (1967).

<5659>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: Carbofuran
PLANT: Soybean (GLYCINE MAX)
EXPERIMENTAL DOSE: 1.0 lb/A; 10% G and 4 lb/A EC
APPLICATION METHODS: Granules in seed furrow and layby side dressing; postemergence spray for liquid applications; six application methods; multiple applications
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: No adverse effect on growth or yield of soybean
COMMENTS: Stand counts revealed germination not affected by application of preplant granules; measurement made after foliar spray application at midbloom was only one to show significant differences among treated plots; plants taller in plots treated with disulfoton or check plots
REFERENCE: Wheeler, B. A. and M. H. Bass, "Effects of Certain Systemic Insecticides on Growth and Yield of Soybeans," J. Econ. Ent. 64(5):1219-1221 (1971).

<5660>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: Carbofuran
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Moderate leaf damage and considerable stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<5661>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: Carbofuran
PLANT: Corn (ZEA MAYS); Rice (ORYZA SATIVA); Sorghum, grain (SORGHUM BICOLOR); Oat (AVENA SATIVA); Goosegrass (ELEUSINE INDICA); Triticum (TRITICUM sp.); Rye (SECALE CEREALE); Barley (HORDEUM VULGARE)
EXPERIMENTAL DOSE: 2.0 to 64.0 oz/100 lb (seed); sticker added; 75% WP
APPLICATION METHODS: Added to seed contained in jars
EXPERIMENTAL CONDITIONS: Laboratory study--seed germination at 72 to 76 F; field study--germination after planting
EFFECTS: Germination of one or more varieties of TRITICUM, rye, and barley was reduced by concentrations of 16 oz/100 lb seed; germination of other crop seed unaffected at 64 oz/100 lb
COMMENTS: Differences in varietal susceptibility to propoxur evident; about 16 oz of propoxur/100 lb of oat seed the most that can be used with reasonable safety
REFERENCE: Ruppel, R.F., "Effect of Seed Treatment with Carbofuran and Propoxur on Germination of Small Grains," J. Econ. Ent. 64(6):1554-1556 (1971).

<5662>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
CHEMICAL COMMON NAME: Furadan
PLANT: Pine, Norfolk Island (ARAUCARIA EXCELSA); Copperleaf, Virginia (ACALYPHA VIRGINICA); Fern, Sprengeri asparagus (ASPARAGUS SPRENGERI); Schefflera (BRASSAIA ACTINOPHYLLA); Black olive; Palm, Madagascar (CHRYSALIDOCARPUS LUTESCENS); Sea grape (COCCOLOBA UVIFERA); Croton, gold dust (CODIAEUM VARIEGATUM); False aralia (LICYGOTHECA ELEGANTISSIMA); Dracaena, red edge (DRACAENA MARGINATA); Fig, Benjamin (FICUS BENJAMINA); Laurel, Cuban (FICUS RETUSA); Hibiscus, yellow (HIBISCUS CALYCINUS); Rose mallow (HIBISCUS ROSA-SINENSIS); Red ixora (IXORA COCCINEA); Jasmine, Wax (JASMINUM VOLUBILE); Privet (LIGUSTRUM JAPONICUM); Jessamine, Chalcas, orange (MURRAYA PANICULATA); Philodendron, self heading (PHILODENDRON SELLOUM); Pittosporum (PITTOSPORUM TOBIRO); Podocarpus (PODOCARPUS MACROPHYLLA); Viburnum (VIBURNUM SUSPENSUM); Palm, Christmas (VEITCHA MERILLI)
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/100 gal (1X and 2X recommended rate)
APPLICATION METHODS: Foliar spray; 3 applications once a week; sprayed to run-off at 40 psi
EXPERIMENTAL CONDITIONS: Field study; pot culture; slat shading; evaluation time--up to 5.5 wk
EFFECTS: Slight damage of schefflera, olive, fig, laurel, hibiscus, and jessamine with no damage to remaining plants
COMMENTS: Araucaria, asparagus, chrysalidocarpus, coccoloba, codiaeum, dizygotheca, dracaena, philodendron, pittosporum, podocarpus, and veitcha tolerated most or all of these materials with essentially no damage; acalypha, brassaia, bucida, ficus, hibiscus, ligustrum, and viburnum were sensitive to many or all of the materials; at recommended rates, diazinon and carbaryl produced the least number of phytotoxic symptoms on the least number of species
REFERENCE: Neel, P.L. and J.A. Reinert, "Phytotoxicity Evaluations of Ten Insecticides on Twenty-Three Species of Ornamental Plants Under Slat Shed Conditions," Proc. Fla. State Hortic. Soc. 88:586-590 (1976).

<5663>
CHEMICAL NAME: 7-Benzofuranol, 2,3-dihydro-2,2,4-trimethyl-, methylcarbamate
CHEMICAL COMMON NAME: NIA-10586
PLANT: Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 8.0 and 16.0 oz/100 lb seed
APPLICATION METHODS: Applied to seed prior to planting; propanil applied postemergence at 4 lb/A
EXPERIMENTAL CONDITIONS: Field study; time period--1967 to 1970; flooding of fields 2 to 4 days after propanil application
EFFECTS: Moderate to severe leaf damage with little or no stand reduction
COMMENTS: 9 of 15 carbamates, 9 of 28 organophosphates, and 2 of 5 miscellaneous compounds significantly reduced number of rice water weevil larvae at one or more of the test rates; 3 carbamates, 9 organophosphates, and 3 miscellaneous materials reduced stand of rice significantly, and all carbamates and miscellaneous materials that controlled rice water weevil interacted with herbicide propanil to cause undesirable seedling leaf burn
REFERENCE: Gifford, J.R., B.F. Oliver, and G.B. Trahan, "Insecticidal Seed Dressings on Drill-Seeded Rice to Control the Rice Water Weevil," J. Econ. Ent. 65(5):1380-1383 (1972).

<5664>
CHEMICAL NAME: 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
CHEMICAL COMMON NAME: Methabenzthiazuron
PLANT: Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 3.0 ppm
APPLICATION METHODS: Addition of solution to vermiculite in which seeds were germinating
EXPERIMENTAL CONDITIONS: Not given
EFFECTS: Reduced photosynthesis and alterations in biochemistry
COMMENTS: Wheat plants growing in subherbicidal concentrations of photosynthesis-inhibiting herbicide methabenzthiazuron, undergo physiological changes similar to shade-adapted plants; primary consequences of herbicidal action were slower rate of photosynthesis and lower concentration of reducing sugars; some secondary effects observed for nitrogen metabolism and chloroplast composition
REFERENCE: Fedtke, C., "Changed Physiology in Wheat Plants Treated With the Herbicide Methabenzthiazuron," Naturwissenschaften 61(6):272-273 (1974).

<5665>
CHEMICAL NAME: 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
CHEMICAL COMMON NAME: Endothall
PLANT: Lamb's-quarters (CHENOPODIUM ALBUM); Pigweed, redroot (AMARANTHUS RETROFLEXUS) ; Ragweed, common (AMBROSIA ARTEMISIIFOLIA); Shepherd's purse (CAPSELLA BURSA-PASTORIS); Crabgrass, large (DIGITARIA SANGUINALIS); Spinach (SPINACIA OLERACEA)
EXPERIMENTAL DOSE: 1.12 and 2.24 kg/ha
APPLICATION METHODS: Preemergence application with an Oxford Precision Sprayer at a rate of 280 l./ha and at 2 kg/cm2 pressure

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EXPERIMENTAL CONDITIONS: Sandy loam soil; spinach plants 10 cm apart in rows 1 m apart; plot -- 3 rows 3 m long; 4 replications of each treatment; weeds per 930 cm were counted; plants harvested from center of each plot 37 days after emergence
EFFECTS: Unsatisfactory weed control except for redroot pigweed at 2.24 kg/ha; no significant effect on plant nitrate accumulation
COMMENTS: Increase in plant nitrate can result from soil or lowered nitrate reductase activity; authors think that decrease in some phase of nitrate reduction by herbicide action is responsible for nitrate accumulation
REFERENCE: Cantliffe, D.J. and S.C. Phatak, "Effect of Herbicides on Weed Control and Nitrate Accumulation in Spinach," Hortscience 9(5): 470-472 (1974).

<5666>
CHEMICAL NAME: 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
CHEMICAL COMMON NAME: Endothall
PLANT: Hibiscus (HIBISCUS ROSA)
EXPERIMENTAL DOSE: 4.9 to 315 micro g/leaf
APPLICATION METHODS: Applied as droplets to leaves with micropipette
EXPERIMENTAL CONDITIONS: Field study (hibiscus and guava); greenhouse study (sorghum and cotton)
EFFECTS: Leaf desiccation and desiccation within 7 days at 80 micro g/leaf
COMMENTS: Pentachlorophenol and AP-20 produced most rapid desiccation at high dosages; usually as effective as PCP and AP-20 within 1 to 2 days after treatment, and produced more extensive desiccation at lower dosages, especially on hibiscus, sorghum, and cotton; diquat, paraquat, cacodylic acid, and AP-20 produced complete defoliation of hibiscus within 5 days after treatment but diquat and paraquat were more effective at lower dosages than other defoliants; diquat completely defoliated hibiscus regardless of placement on leaf, but higher dosages required for effective desiccation when applied non-uniformly over leaf
REFERENCE: Bovey, R.W. and F.R. Miller, "Desiccation and Defoliation of Plants by Different Herbicides and Mixtures," Agron. J. 60(1):700-702 (1968).

<5667>
CHEMICAL NAME: 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
CHEMICAL COMMON NAME: Endothall
PLANT: Sorghum (SORGHUM VULGARE); Oat (AVENA SATIVA); Cucumber (CUCUMIS SATIVUS)
EXPERIMENTAL DOSE: 1 and 10 ppm
APPLICATION METHODS: Root bioassay--25 ml herbicide solution mixed with 200g silica sand; shoot bioassay--40 ml herbicide solution mixed with 310g silica sand
EXPERIMENTAL CONDITIONS: 1% stock solution of each herbicide; root bioassay--mixture of 200g silica sand and 25 ml herbicide solution placed in petri dish, 4 pregerminated seeds each of sorghum, oat and cucumber placed in petri dish for 2 days, grown in dark; shoot bioassay--310g silica sand and 40 ml herbicide mixture, 5 pregerminated seeds each of sorghum and oat planted in mixture in paper cup for 4 days, grown in dark
EFFECTS: Root--less than 50% inhibition in all plants at 1 ppm, 50% or greater inhibition in all plants at 10 ppm; shoot--less than 50% inhibition in sorghum and oat at 1 ppm, less than 50% in sorghum but 50% or greater in oat at 10 ppm
COMMENTS: Root and shoot bioassays sensitive to most herbicides except photosynthetic inhibitors; inhibition refers to growth
REFERENCE: Kratky, B.A. and G.F. Warren, "The Use of Three Simple, Rapid Bioassays on Forty-Two Herbicides," Weed Res. 11:257-262 (1971).

<5668>
CHEMICAL NAME: 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
CHEMICAL COMMON NAME: Endothall
PLANT: Sorghum (SORGHUM BICOLOR); Pea, cow- (VIGNA UNQUICULATA); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 89.6, 179, 358, 717 and 1434 ug/plant
APPLICATION METHODS: Formulation--disodium salt, 0.91 kg/3.79 l.; herbicide solution in water containing 0.5% (v/v) X-77 as surfactant was applied on plants
EXPERIMENTAL CONDITIONS: Cowpea plants 10 to 12 days old when treated and sorghum plants were 25 to 28 days old; cowpea leaves treated by depositing 0.1 ml herbicide solution on upper surface, 0.1 ml deposited in partially expanded second true leaf of sorghum; 0.1 ml applied to hypocotyl of cowpea in other tests; germination effects determined by soaking seeds in 10(-7), 10(-6), 10(-5), 10(-4) and 10(-3) M aqueous solutions for 2, 4, and 8 hours, after treatment, seeds washed with 35 ml distilled water--effects recorded for wheat as well as other plants
EFFECTS: Cowpea growth inhibited at all rates, 20% at 89.6 ug and 70% at 1434 ug; sorghum growth inhibited at all rates, about 25% at 89.6 ug and 80% or greater at 1434 ug; cowpea death recorded at 179 ug (about 5% kill), 40% kill at 1434 ug; sorghum severely desiccated, 20% at 179 ug and 100% at high rate; sorghum and wheat germination moderately inhibited, cowpea germination severely inhibited
COMMENTS: Sorghum seedlings more sensitive than cowpea seedlings
REFERENCE: Baur, J.R. and R.W. Bovey, "Herbicidal Effects of Tebuthiuron and Glyphosate," Agron. J. 67:547-553 (1975).

<5669>
CHEMICAL NAME: 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
CHEMICAL COMMON NAME: Endothall
PLANT: Pondweed, sago (POTOMOGETON PECTINATUS); Pondweed, American (POTOMOGETON NODOSUS); Pondweed, curly-leaf (POTOMOGETON CRISPUS); Pondweed (POTOMOGETON PERFOLIATUS); (CHARA VULGARIS); Naiad (NAJAS MINOR); (HYDRILLA VERTICILLATA); Hornwort (CERATOPHYLLUM DEMERSUM); Water celery (VALISNERIA SPIRALIS); Linseed (LINUM USITATISSIMUM); Mustard (BRASSICA CAMPESTRIS); Gram (CICER ARIETINUM); Clover, Egyptian (TRIFOLIUM ALEXANDRINUM); Coriander (CORIANDRUM SATIVUM); Wheat (TRITICUM AESTIVUM); Rice (ORYZA SATIVA)
EXPERIMENTAL DOSE: 3.0 ppm
APPLICATION METHODS: Broadcast; G; into water; dipotassium salt
EXPERIMENTAL CONDITIONS: Application in stagnant and flowing water, stagnant water--pH-7.6, air temp--21 C,

<5669> CONT.
water temp--18 C; flowing water--velocity 0.4 km/hr, pH-8.0; air temp--28 C; water temp--22 C; conductivity--0.3 mmhos/cm; evaluation time--one and 8 or 9 wk; treated water used to irrigate crop plots
EFFECTS: Effective control of all water weeds except CHAR and no effect on crop plants
COMMENTS: Of 5 herbicidal treatments employed, chlorothiamid, endothall and 2,4-D killed all submerged water weeds; all crop plants resistant to herbides except gram (susceptible to endothall, dipot.) and rice (susceptible to diuron)
REFERENCE: Dutta, T.R., J. Prasad, and R.P. Singh, "Evaluation of Herbicides for Submerged Weeds in Chambal and Bhakra-Nangal Canal Systems," Indian J. Agric. Sci. 42(1):70-75 (1972).

<5670>
CHEMICAL NAME: 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
CHEMICAL COMMON NAME: Endothall
PLANT: Bromegrass, downy (BROMUS TECTORUM); Wheatgrass, intermediate (AGROPYRON INTERMEDIUM); Bluegrass, Kentucky (POA PRATENSIS); Bromegrass, smooth (BROMUS INERMIS)
EXPERIMENTAL DOSE: 3.0 to 9.0 lb/A
APPLICATION METHODS: Postemergence spray; 20 or 30 gal/A
EXPERIMENTAL CONDITIONS: Field study; 2 locations in WA; time period--1958 to 1960
EFFECTS: At 4.0 to 8.0 lb rates, slight to moderate (variable) downy brome control with no adverse effect on wheatgrass; bluegrass and smooth brome yield reduced at 5.0 to 7.0 lb rates
COMMENTS: IPC and CIPC most effective herbicides for controlling downy brome without serious injury to perennial grasses grown for seed production; endothal gave good downy brome control
REFERENCE: Canode, C.L., W.C. Robocker, and T.J. Muzik, "Grass Seed Production as Influenced by Chemical Control of Downy Brome," Weeds 10(3):216-219 (1962).

<5671>
CHEMICAL NAME: 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
CHEMICAL COMMON NAME: Endothall
PLANT: Naiad, Southern (NAJAS GUADALUPENSIS)
EXPERIMENTAL DOSE: 3.0 to 10.0 ppmw
APPLICATION METHODS: Injected under surface of water by spray nozzle at 120 psi
EXPERIMENTAL CONDITIONS: Field study; naiads growing in 2 locations in FL; time period--1960 to 1962
EFFECTS: Generally moderate control of naiad at 10 ppmw for 12 to 16 wk
COMMENTS: Most promising of 13 herbicides for control of southern naiad were acrolein, endothall, diquat, and paraquat; acrolein and endothall gave most rapid kill of southern naiad but retreatment necessary at end of 16 weeks
REFERENCE: Blackburn, R.D. and L.W. Weldon, "Control of Southern Naiad in Florida Drainage and Irrigation Channels," Weeds 12(4):295-298 (1964).

<5672>
CHEMICAL NAME: 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
CHEMICAL COMMON NAME: Endothall
PLANT: Plants; Castorbean (RICINUS COMMUNIS)
EXPERIMENTAL DOSE: 8.0 lb/A
APPLICATION METHODS: Preemergence spray incorporated
EXPERIMENTAL CONDITIONS: Field study; 5 Nebraska locations; time period--1960 to 1963; sprays in conjunction with rotary hoeing and cultivation
EFFECTS: Moderate weed control with no adverse effect on castorbean yield
COMMENTS: Castorbeans extremely tolerant of rotary hoe; timely use plus cultivation gave effective weed control in castorbeans; preemergence herbicides, used either alone or in combination, that appeared most promising for selective control of weeds in castorbeans were: CDA, DCPA, EPTC, NPA, trifluralin, and R-1607
REFERENCE: Burnside, O.C. and D.L. Kittock, "Weed Control in Castorbeans," Weeds 13(2):130-133 (1965).

<5673>
CHEMICAL NAME: 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
CHEMICAL COMMON NAME: Endothall
PLANT: Willow (SALIX sp.); Eucalyptus, red gum (EUCALYPTUS CAMALDULENSIS)
EXPERIMENTAL DOSE: 100 and 1000 mg/l.
APPLICATION METHODS: Exposed plant roots placed in 1.0 liter herbicide solution for 1 hr; dipotassium salt and cocoamine salt formulations
EXPERIMENTAL CONDITIONS: Pot studies; plastic pot (holes in bottom) with plant placed on top of another pot containing soil; after root growth through holes into second pot, plants carefully removed and placed on top of pot containing herbicide solution; 1-hr herbicide exposure
EFFECTS: Eucalptus--dipotasium salt did not kill roots, cocoamine salt did not completely kill roots at 1000 mg/l.; willow--cocoamine salt killed roots and injured foliage at 100 mg/l. or higher
REFERENCE: Ahrens, J.F., O.A. Leonard, and N.R. Townley, "Chemical Control of Tree Roots in Sewer Lines," J. Water Pollut. Control Fed. 42(9):1643-1655 (1970).

<5674>
CHEMICAL NAME: 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
CHEMICAL COMMON NAME: Endothall
PLANT: Kikuyugrass (PENNISETUM CLANDESTINUM)
EXPERIMENTAL DOSE: 10 to 30 gal/A
APPLICATION METHODS: Not given
EXPERIMENTAL CONDITIONS: Field study
EFFECTS: Slight to moderate control with heavy regrowth
COMMENTS: Effective control of kikuyugrass obtained with only a few herbicides tested; with one or two exceptions, best materials were those which retained in soil for rather long time, thus preventing

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<5674> CONT.
regrowth and destroying seedlings as they germinate; makes long waiting period necessary before replanting with desirable grasses; dalapon, one of best herbicides, appeared about as effective at low rates
REFERENCE: Youngner, V.B., "Kikiyugrass, PENNISETUM CLANDESTINUM, and Its Control," S. Calif. Turfgrass Cult. 8(1):1-4 (1958).

<5675>
CHEMICAL NAME: 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
CHEMICAL COMMON NAME: Endothall
PLANT: Waterweed (ELODEA CANADENSIS); Naiad, Southern (NAJAS GUADALUPENSIS); Coontail (CERATOPHYLLUM DEMERSUM); Alligatorweed
EXPERIMENTAL DOSE: 5.0 and 20.0 lb/A; EC and ester
APPLICATION METHODS: Addition by syringe to water containing test species (submersed species) and spray (100 gal/A at 20 psi)
EXPERIMENTAL CONDITIONS: Laboratory study; temperature--80 F; light intensity--60 to 80 ft c; photoperiod--10 hr; evaluation time--2 to 8 wk with continuous and varied (0.5 to 336 hr) contact
EFFECTS: Effective weed control for 4 wk at all rates
COMMENTS: Among 75 herbicides evaluated on three species of submersed weeds only diquat, endothal, and acrolein gave 85% or better control at 1 ppmw in still-water tests; only acrolein and endothal effective on submersed weeds at 1 ppmw in limited-exposure test; evaluation of 17 herbicides on three species of floating aquatic weeds indicated diquat effective
REFERENCE: Blackburn, R.D., "Evaluating Herbicides Against Aquatic Weeds," Weeds 11(1):21-24 (1963).

<5676>
CHEMICAL NAME: 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
CHEMICAL COMMON NAME: Endothall
PLANT: Cucumber (CUCUMIS SATIVUS); Sorghum (SORGHUM VULGARE); Wheat (TRITICUM AESTIVUM)
EXPERIMENTAL DOSE: 1 x 10(-4), 1 x 10(-5), and 1 x 10(-6) M
APPLICATION METHODS: Addition to Hoagland's nutrient solution
EXPERIMENTAL CONDITIONS: Environmental chamber; solution culture; photoperiod--12 hr; light intensity--300 ft c; temperature--32 to 34 c; evaluation time--11 da
EFFECTS: Minimum lethal concentration 4.37 to 3.80 (negative log) M
COMMENTS: Wheat and cucumber about equally sensitive as test plants, while sorghum at similar growth stage required ten to one hundred times the concentration of most chemicals for lethal effect; only paraquat as root-absorbed herbicide appeared to be completely non-selective to all three species; triazines showed considerable selectivity to sorghum; of all the triazines tested, only CP-17029 more toxic to wheat and sorghum than to cucumber
REFERENCE: Hilton, H.W. and Nomura, N., "Phytotoxicity of Herbicides as Measured by Root Absorption," Weed Res. 4(3):216-222 (1964).

<5677>
CHEMICAL NAME: 7-Oxybicyclo[2.2.1] heptane-2,3-dicarboxylic acid, compd. with N,N-dimethyl-1-tridecanamine(1:2)
CHEMICAL COMMON NAME: TD-282
PLANT: Beet (BETA sp.); Pigweed, redroot (AMARANTHUS RETROFLEXUS); Kochia (KOCHIA SCOPARIA); Broadleaf weeds; Foxtail (SETARIA sp.)
EXPERIMENTAL DOSE: 4 to 16 lb/A
APPLICATION METHODS: Preplanting incorporated spray at 40 psi and 14.3 gpa
EXPERIMENTAL CONDITIONS: Spring and summer tests; sandy and clay loam soils; some weed seedlings made; irrigation when necessary; broadleaf weeds dominant over grass weeds
EFFECTS: Spring--13% beet stunting and 103% beet stand, 70, 77, 72, and 81% pigweed, kochia, broadleaves, and foxtail control, respectively; summer--90% beet stunting and 128% stand, 90% pigweed and 96% foxtail control
COMMENTS: Comparisons with control; broadleaves refers to broadleaves other than pigweed and kochia
REFERENCE: Sullivan, E.F., R.R. Wood, R.L. Abrams, and S.G. Walter, "Preplant Weed Control on Sugar Beets," Am. Soc. Sugar Beet Technol. 13(5):389-396 (1965).

<5678>
CHEMICAL COMMON NAME: Demeton
PLANT: Sorghum (SORGHUM BICOLOR)
EXPERIMENTAL DOSE: 1/100, 1/75, 1/50, 1/25, 1/12, 1/6, 1/3, 2/3, and 1 lb/A
APPLICATION METHODS: 2% EC formulation; application of rate of 60 gpa in seed furrows at planting
EXPERIMENTAL CONDITIONS: Keith silt loam; 4 rows by 30 ft plots; randomized block design with 3 replications; June 16 seeding and insecticide treatment; emergence counts taken 11 days after seeding
EFFECTS: 1 lb/A significantly reduced emergence when compared with untreated control; other treatments had no significant effects
COMMENTS: Test compound used for greenbug control
REFERENCE: Depew, L.J., "Effect of In-Furrow Treatments of Three Systemic Insecticides on Grain Sorghum Emergence," J. Econ. Entomol. 64(5):1321-1322 (1971).

<5679>
CHEMICAL COMMON NAME: Chlorpyrifos
PLANT: Bean, bush (PHASEOLUS HUMILIS); Bean, lima (PHASEOLUS LIMENSIS); Corn (ZEA MAYS)
EXPERIMENTAL DOSE: 1 oz/cwt of seed and 0.75 lb/A
APPLICATION METHODS: Slurry treatments--seeds placed in insecticide mixture and shaken 3 to 10 min; seed furrow treatments with granular formulation
EXPERIMENTAL CONDITIONS: Experiment 1--randomized complete block design, Lima silt loam, May 24 planting, 4 replications; experiment 2--some conditions except Honeoye silt loam and June 6 planting
EFFECTS: No significant phytotoxicity
COMMENTS: Main study emphasis was seedcorn maggot control
REFERENCE: Eckenrode, C.J., N.L. Gauthier, D. Danielson, and D.R. Webb, "Seedcorn Maggot: Seed Treatments and Granule Furrow Applications for Protecting Beans and Corn," J. Econ. Entomol. 66(5):1191-1194 (1973).

<5680>
CHEMICAL COMMON NAME: USB-3153
PLANT: Potato (SOLANUM TUBEROSUM); Broadleaf weeds; Quackgrass (AGROPYRON REPENS); Grasses
EXPERIMENTAL DOSE: 0.5 and 1.0 lb/A
APPLICATION METHODS: Drag-off spray; 80 gal/A at 40 psi
EXPERIMENTAL CONDITIONS: Field study; soil--Caribou gravelly silt loam
EFFECTS: Slight to moderate control of broadleafs and quackgrass with effective control of annual grasses and no adverse effect on potato yield
COMMENTS: Metolachlor applied preemergence and penoxalin applied layby did not provide satisfactory control of broadleaved weeds; none of the drag-off treatments with dinitramine, USB-3153, or trifluralin controlled broadleaved weeds; USB-3153 and trifluralin applied at drag-off did not give satisfactory control of quackgrass
REFERENCE: Murphy, H.J. and T. Gajewski, "Effect of Several Herbicides Applied Preemergence, at Drag-Off and Layby on Weed Control in White Potatoes," Proc. Northeast. Weed Sci. Soc. 31:176-179 (1977).

<5681>
CHEMICAL COMMON NAME: SO(2)
PLANT: Tobacco (NICOTIANA TABACUM)
EXPERIMENTAL DOSE: 150 pphm (3 hr exposure)
APPLICATION METHODS: Fumigation
EXPERIMENTAL CONDITIONS: Greenhouse study; soil--1:1 mixture of loam and vermiculite; pot culture; evaluation time--3 or 4 da
EFFECTS: very little injury (2 to 6%) to leaf surfaces
COMMENTS: Ozone and sulfur dioxide mixtures acted synergistically to inflict ozone-type symptoms on all Maryland cultivars; no injury resulted when plants fumigated singly for 4 hours with ozone at 3 to 3.5 pphm and sulfur dioxide at 45 to 50 pphm
REFERENCE: Menser, H.A., G.H. Hodges, and C.G. McKee, "Effects of Air Pollution on Maryland (Type 32) Tobacco," J. Environ. Quality 2(2):253-258 (1973).

<5682>
CHEMICAL COMMON NAME: Copper sulfate
PLANT: Elodea (ELODEA NUTTALLII); Pondweed, curly-leaf (POTOMOGETON CRISPUS); Chara (CHARA sp.)
EXPERIMENTAL DOSE: 1.0 and 3.0 ppm
APPLICATION METHODS: Applied to surface of pond water
EXPERIMENTAL CONDITIONS: Pond study; 3 sites
EFFECTS: Effective control of POTAMOGETON and CHARA at 3.0 ppm with moderate to effective control of ELODEA
COMMENTS: During conditions of high temperatures and heavy algal or macrophytic growth, severe changes in pond ecosystems resulted from copper sulfate dosage at levels normally recommended for aquatic weed control; although target species controlled satisfactory at 3 ppm copper sulfate, it was temporary, as green algae and periphyton growths returned to ponds with 3 weeks after treatment
REFERENCE: McIntosh, A., "Notes on the Use of Copper Sulfate in Ponds," Bull. Env. Contam. Toxicol. 12(1):425-432 (1974).

<5683>
CHEMICAL COMMON NAME: Treflan
PLANT: Goosegrass (ELEUSINE INDICA); (LEUCAENA LEUCOCEPHALA)
EXPERIMENTAL DOSE: 0.14, 0.28, and 5.6 kg/ha
APPLICATION METHODS: Soil addition; postemergence spray (charcoal study)
EXPERIMENTAL CONDITIONS: Greenhouse study; pot culture
EFFECTS: Full control of crowsfeet at all rates and reduced growth of leucaena at highest rate
COMMENTS: DCPA applied at pre-emergent rates reduced leucaena yield, plant height and root length; highest rate, yield only 2 per cent of control yields; severe tap root damage noted; trifluralin as a pre-emergent spray controlled crowsfoot at all rates but resulted in linear reduction in leucaena yield with increasing herbicide rate
REFERENCE: Jones, R.J. and A.S. Aliynt, "The Effect of ELEUSINE INDICA, Herbicides on the Seedling Growth of LEUCAENA LEUCOCEPHALA cv. Peru," Trop. Grassl. 10(3):195-203 (1976).

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